assessment of alternatives

visitor / administrative facility sites

december 1980

KNIFE RIVER INDIAN VILLAGES

NATIONAL HISTORIC SITE / NORTH DAKOTA

U.S. DEPARTMENT OF THE INTERIOR

Assessment of Alternatives

Visitor/Administrative Facility Sites

Knife River Indian Villages
National Historic Site

North Dakota

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National Park Service
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TABLE OF CONTENTS

ILLUSTRATIONS

I. INTRODUCTION

In 1974 Knife River Indian Villages National Historic Site was authorized by Congress to preserve certain historic and archeologic resources of Plains Indian cultures. All lands have been acquired by the National Park Service.

The historic site now has temporary administrative offices and interpretive facilities 3.5 miles north of Stanton (see Existing Conditions Map). Until permanent facilities are available closer to Stanton, guided tours and minimal interpretive and orientation displays will be centered at this location.

Providing visitor and interpretive facilities and programs is particularly critical, because the cultural resources and their significance are not apparent to the average visitor. Interpretive facilities and programs are necessary for the national historic site to be appropriately used, appreciated, and valued by the public. Permanent administrative facilities are also needed for optimum protection of the irreplacable archeological resources, coordination and management of interpretive programs, and maintenance of the above programs and facilities.

The alternatives presented in this assessment to solve the previously mentioned problems all conform with the proposals made in the Knife River Indian Villages Master Plan. The main development concept behind that plan was to concentrate "the main visitor impact on the group of villages to the south, closer to Stanton. The main development will be situated in such a manner that it will not intrude on the historic scene, but will be closely related to these features. Here, a multifunctioning visitor facility will support the necessary interpretation, information, administration, research, protection, storage, and maintenance facilities".

II. DESCRIPTION OF THE SITE

A. Regional Setting

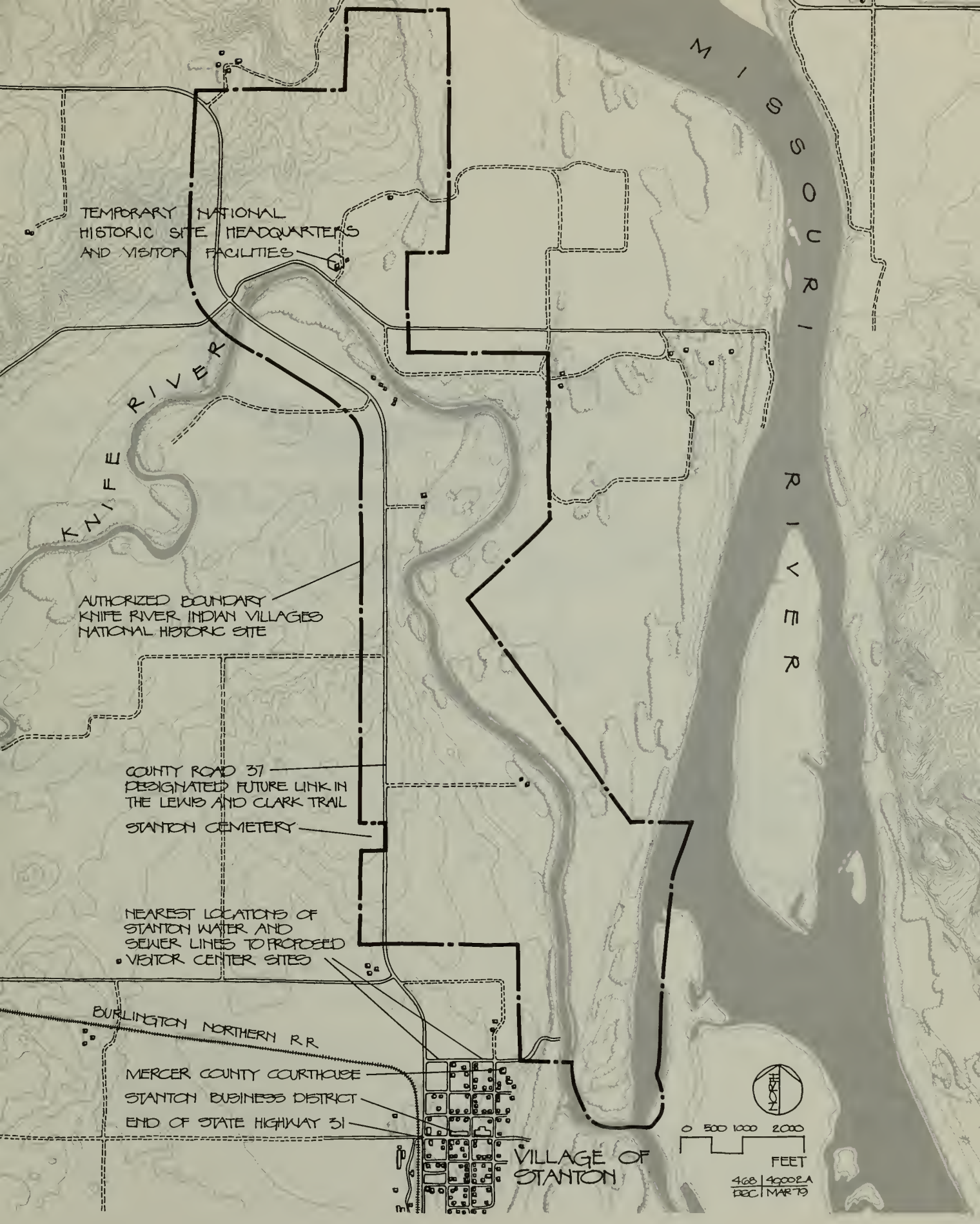
The Knife River Indian Villages comprise a cluster of archeological sites located near the confluence of the Knife and Missouri Rivers, just north of Stanton, North Dakota. Stanton, with a population of around 750, is the Mercer County seat. It is located 63 miles northwest of Bismarck, the state capital, and about 12 miles downstream from the Garrison Dam, which impounds Lake Sakakawea. (See Regional Setting Map).

Principal highway access to the area is east-west State Highway 200. U.S. Highway 83 provides a north-south artery east of the Missouri River, connecting with Interstate 94 on the south and U.S. 2 seventy miles to the north. State Highway 31 also connects Interstate 94 with State Highway 200 between Stanton and Hazen. Closest commercial air passenger service is in Bismarck, and closest rail passenger service is in Minot.

The principal geographical features in the region surrounding the Knife River villages are the Knife and Missouri Rivers, and the surrounding vast rolling prairie. Here, agriculture has traditionally been the dominant industry, and is centered chiefly on livestock production and cash grain crops. However, agriculture is rapidly being supplanted by coal mining and energy related industries as the regions dominat industry. A large lignite coal mine produces the fuel for two powerplants at Stanton. Coal mining for lignite, a low grade coal, is the most important industry in the seven county region. Several new or expanded strip mines are expected, as well as the continued operation of an existing strip mine. This will result in an increased work force and an increase in population in the region. Coal production in the region during 1976 was 7-9 million tons, representing 65% of the 12-3 million tons produced in North Dakota that year.

Clays, also among the region's more valuable mineral resources, are abundant, and vary in quality from common brick to fine pottery clays and expanded lightweight aggregates. Glacial boulders used for the construction of foundations, and occasionally for complete buildings, are also found here. Sand and gravels used for plasters, mortars, foundry sand, highway and road construction, railroad ballast, paving, and sidewalks are plentiful.

About 22 miles north of Stanton via existing roads is Garrison Dam, one of the largest rolled-fill earth embankments in the world, behind which lies the largest of the Missouri Basin reservoirs, Lake Sakakawea. It is more than 14 miles wide at some points and 178 miles long, with 324,000 acres of water surface area and 1340 miles of shoreline available for recreation. The U.S. Army Corps of Engineers has developed recreational facilities and services at a dozen different points along the lake, including boat ramps, docks, storage areas, and rentals, as well as fishing, camping, swimming, picnicking, rental cabins, and related concessions. Also, there is a small town park in Stanton at the mouth of the Knife River which offers camping, picnicking, swimming, boating, fishing, and playground facilities.



EXISTING CONDITIONS

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REGIONAL SETTING

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The full development of the congressionally authorized Lewis and Clark National Historic Trail between Wood River, Illinois and Fort Clatsop, Oregon, could increase visitation to the Knife River region. The North Dakota state highway department initiated a program to pave and maintain all county roads that are part of this historic trail route, provided the counties grade to state specifications that were adopted in 1970. While the heaviest visitation to the national historic site will be from the Mandan-Bismarck area on Interstate 94, a fair influx might be expected from the Garrison Reservoir recreational area to the north, where present visitation approximates 800,000. But at present, the Knife River region is relatively isolated, with negligible tourist traffic.

The population in Mercer County is expected to double or triple to a peak of 15,000 to 17,000 by 1985 due to increased coal mining activity and a new coal gasification plant in the area. The population in the seven county region is expected to increase ten to fifteen percent during this period, to a peak of 140,000 to 150,000. (U.S. Department of Interior, Bureau of Land Management, 1978). With a population of around 750, the city of Stanton offers minimal services and facilities to visitors. Hazen, located about 12 miles west of Stanton on State Route 200, with a population of 2300, also offers only limited facilities, although it does have a small hospital. The nearest population center of any size is the Mandan-Bismarck metropolitan complex of 46,000 persons, 63 miles southeast of Stanton.

B. Site Setting

1. Archeology/History

a. Prehistoric Cultures

Archeological sites in the area of the Knife River Indian Villages National Historic Site reveal cultural materials dating from about 11,000 years ago to the Historic period (Schneider, 1975). Although the earliest dating resources (11-8000 years ago) have not been located within the park, the high, stabilized Pleistocene river terraces at the western half of the park may eventually yield artifacts from this period. This is known as the Paleo-Indian period and is characterized by the use of long, lanceolate thrusting and throwing spears to exploit now extinct Pleistocene large mammals.

The primary lifeway during this period on the northern Plains was the hunting of large and small game and gathering of wild vegetable products by small bands. It is important to note that this adaptation to the environment was successful and continued into historic times. Even the Hidatsa who occupied the area near the mouth of the Knife River during historic times spent around half of the year outside of their horticultural villages in this pursuit. The basic tool kit of the Paleo-Indian peoples (the thrusting spear or spear thrown with the atlatl, knives, gravers, perforators, drills, side-scrapers, end-scrapers, grooved pounding nails, fleshers, and other tools) continued to be used until such tools of stone or bone were replaced by metal items produced

by Euroamerican technology. After the Paleo-Indian period, only variations in the hafting of spear points, knives, and point forms are diagnostic for the temporal affiliation of any given site until such innovations as the bow, pottery, and a supplemental horticulture tool kit were introduced.

The end of the Pleistocene brought a period of low rainfall and great erosion. The great bison evolved into the smaller buffalo of today. Human populations were forced to follow this game to the Plains margins or to well-watered refuges within the Plains where game could survive. This harsh climatic phase, roughly 6,000 to 4,000 BC, was accompanied by the cultural period known as the early Archaic period. Sites of this period are not well represented on the northern Plains, perhaps because of the climate and resultant low game reserves. One kilometer north of the park a site yielding a dart point and other tools characteristic of this period demonstrates that the area of the park was exploited during this period, even though occupation or game kill sites have yet to be identified within the Knife River Indian Villages National Historic Site.

The climate of about 4000 BC to AD 500 progressively moderated to modern conditions, corresponding with an increase of game and human populations. The increase in human population brought about local variations in projectile points as hunters sought new ways to haft their atlatl darts. About 500 BC to AD 500 the innovation of the bow and arrow spread into the Northern Plains, marking the begining of the Late Period of prehistory.

From 200 BC to AD 900 there was an intrusion of a new people from the south and east into central North Dakota. This period is known as the Woodland period and is characterized by the appearance of diagnostic points; but more importantly by the introduction of ceramics, burial mounds, effigies, and ossuaries, and possibly horticulture into the area. Woodland ceramics are bulky and crudely made when compared to later vessels and are relatively rare in Woodland sites in the area. Their importance lies in their documentation of a new technology and the longer occupation of a site. A more important indicator of a long term site occupation is the practice of erecting large burial mounds, often in complexes of two or more. Some "mounds" were excavated instead of constructed of piled earth and took on effigy forms (Chanko and Wood, 1973). Other effigies were made of small boulders. Associated with most mounds and some effigies are ossuaries of human burials. These ossuaries commonly contain many grave goods. These features are frequently located on elevated hills and bluffs with the corresponding Woodland occupation site located on terraces of nearby water courses. The amount of labor needed to erect Woodland mounds strongly suggests a horticultural supplement to human diet, but this assumption has not yet been tested in this area.

North and south of the national historic site on the bluffs facing the Missouri and Knife River valleys lies a significant concentration of Woodland mounds. Several hundred meters north of the park is the highly significant Stanton Mound Group, a complex of one circular and six linear mounds. The occupation site relating to this mound group also lies north of the park boundary.

Beginning about AD 1200 the area saw the influx of the Middle Missouri tradition of the Plains Village cultures from the south, a new tradition that acted as the cultural baseline for developments, which would continue into the Historic period. The southern immigrants introduced varieties of corn, beans, squash, tobacco, and sunflowers which they grew around open, unfortified villages of rectangular houses. Archeological evidence demonstrates the same characteristics of dual reliance on horticulture and hunting as noted for the historic Mandan and Hidatsa. The tool kits, with minor chronologically diagnostic variations, remain essentially the same into the historic period, with pottery, scapula hoes, scapula knives, antler rakes and other artifacts being added to the basic hunting inventory as a response to the necessities of semi-sedentary horticultural subsistence strategy (Lehmer, 1971). The placement of villages on terraces overlooking the Missouri River and on occasion the lower reaches of its tributaries continued into the Historic period and demonstrates a similar perception of the cultural ecology. The broad cultural characteristics of the historic period may tentatively be extended back to this period in the absence of any physical evidence to the contrary.

Cultural change within the Extended Middle Missouri variant appears to be subtle but ongoing. Villages became both larger and more densely occupied. This last trait culminates in the villages of tightly packed rectangular houses within elaborate earthen fortifications of the Terminal Middle Missouri variant (1550 to AD 1675) to the south. The lack of such early fortified villages within the Knife River Indian Villages National Historic Site or surrounding areas may have resulted from a temporary abandonment of this area, but may also reflect the lack of the necessity of such a fortification to the north. The fortifications of the Terminal Middle Missouri sites are thought to be a physical expression of aggressive conflict with protohistoric Arikara who were at this time pushing northward along the Missouri.

Sites of the Extended Middle Missouri variant are well represented within the park. As a result of the 1978 field season, the Greater Buchfink site has been determined to be a cluster of six geographically and probably chronologically distinct sites of this period. Test excavations exposed a seventh such village site, a project directed cultural resource survey another, river bank investigations two more sites, and informal surface reconnaisance an additional village site.

Sites within 3 kilometers to the east and the west of the park boundaries may date from the early phase of the Extended Middle Missouri variant. These sites are of particular significance because of their early date and site density. Study of the variation in artifacts, settlement pattern, and dates will resolve many questions on this cultural period and the transition to the protohistoric tradition.

One factor influencing the heavy occupation of the area now within the Knife River Indian Villages National Historic Site may be the control of riverine export of Knife River flint from this location. Sites of this period 150 kilometers south of the Knife River show an extremely heavy reliance on this non-local lithic material (Ahler, 1977).

Another site dating to the period between 1550 and AD 1675, was investigated through test and mitigative excavations during the 1978 field season (Ahler, 1978a). These excavations revealed a cache pit and house floor. Sites of this type relate to the protohistoric Arikara and are characterized by circular earthlodge remains and a brushed and trailed treatment of ceramic rims. Such sites generally cluster south of the Grand River in South Dakota, making this site unique in North Dakota and even more significant within the Knife-Heart area. The contacts between the protohistoric Arikara and Mandan appear to have been hostile, but this site may represent one of the rare instances recorded in both Native American and Euroamerican histories where Arikara villages quarreled and one moved north to coreside with the Mandans (Bowers, 1950; Tabeau, 1932). The adoption of the circular earthlodge by the protohistoric Hidatsa and Mandan from the Arikara was probably faciliated by such non-hostile cultural interactions between the different peoples.

The Post-Contact Coalescent variant of the Plains Village culture begins about AD 1675. The first portion of this variant, the Heart River phase (1675 to AD 1780), saw the apex of horticultural village civilization; the following Knife River phase (1780 to AD 1861) its decline and near destruction. Sites of this variant are distinguished by the circular earthlodges, palisade defenses around villages, and the appearance of increasing amounts of Euroamerican trade goods. The Knife River phase includes all known historic sites of the Hidatsa and Mandan peoples with the Heart River phase consisting of the protohistoric sites of these groups. The Knife River phase sites may also be characterized by the marked reduction in site distribution and the poor quality of ceramics, both products of the smallpox epidemic of 1780-1782, and the devastating epidemic of 1837 (Trimble, 1979). To date, the only diagnostic difference between Mandan and Hidatsa villages is the presence of a central plaza with a large ceremonial lodge on the northern perimiter in Mandan villages. Hidatsa sites appear to have no such marked ceremonial features within villages.

b. Ethnography

The oral histories of the Hidatsa are of little help at present in interpreting the cultural affiliation of protohistoric Heart River phase village sites. Part of the problem lies in the nature of the Hidatsa ethnic group. The term ethnic group is here prefered to the term tribe because while ethnic group presumes only a sense of mutually shared identity, tribe presumes an overall sociopolitical organization. The modern Hidatsa are an amalgam of three previously autonomous village subethnic groups: The Awaxawi, Awatixa, and Hidatsa. Each group maintained separate villages until the abandonment of their three villages at Knife River in 1845 and each had different traditions of their arrival on the Missouri River. Furthermore, the Awatixa and the Mountain Crow are said to have once been one people as is also said for the Hidatsa and River Crow. The term Gros Ventres occasionally applied to the Hidatsa ethnic group as a whole was a mistranslation of the Hidatsa-Crow separation myth concerning a dispute over a buffalo paunch. The Crow groups united to form the Absaroka ethnic group, but continued to maintain some autonomy into the late Historic period. The Mandans may also be best considered an ethnic group as they form a

consolidation of the Nuptadi, Nuitadi, and Awatiga sub-groups. The trends toward ethnic consolidation of the Hidatsa and Mandan were heavily influenced by the spread of epidemic deseases occuring at the same time as the westward spread of the Sioux and southward movements of the Assiniboine.

Bowers (1950, 1965) studied the Hidatsa traditions and suggests that the Hidatsa groups migrated west to the Missouri Valley from the Red, Sheyenne, and James Rivers and Devils Lake, but at different times. There is ample evidence of horticultural villages in these areas but the sites have not been worked into any overall cultural sequence. The Awatixa were probably the first of the Hidatsa groups to approach the Missouri and established themselves in the Painted Woods region south of the Knife River. The Awaxawi came next, perhaps living, as traditions relate, at Scattered Village on the Heart River. At the request of the Mandans the Awaxawi moved north to the Knife River area, where they came into conflict with the Hidatsa proper and moved south of the Heart River to live with the Cheyenne. This group then moved north again and by the 1780's were living 50 km below the Knife River. The Hidatsa subethnic group were latecomers to the area, moving from Devils Lake to establish their first Missouri village at the Big Hidatsa village. This village is said by Hidatsa traditions not to be as much a settled population center as were the villages of the Awatixa and Awaxawi, but to be more of a base of operations where a fluctuating village population practiced horticulture while other group members engaged in hunting and gathering.

Hidatsa traditions and archeology intersect within the Knife River Indian Villages where both the lower Hidatsa villages and the Big Hidatsa village (traditional homes of the Awatixa and Hidatsa subethnic groups) are Heart River phase sites. Over 2.75 meters of village midden excavated in one test pit in 1978 revealed a long period of occupation. House-like features and village type cultural material suggests the village may have once been larger. A recent study (Downer and Wood, 1977) hypothesizes the schism of the Awatixa from the Crow occurred later than AD 1675 and the broader area identified during the 1978 field season may be significant in this regard. Hidatsa tradition calls the Lower Hidatsa site the Mountain or Crow village.

Following the smallpox epidemic of 1780-1782 the Awatixa retreated to Rock Village and the Hidatsa possibly to Nightwalker's Butte and/or the Jacobsen site. By the early 1790's the Big Hidatsa and Lower Hidatsa villages were reoccupied and by 1797 all the Hidatsa subethnic groups were living close together with the Awaxawi at Amahami Village, the Awatixa at Sakakawea, and the Hidatsa proper at Big Hidatsa Village. The Mandan were occupying the Black Cat and Deapolis villages south of the park.

An outstanding characteristic of the Hidatsa and Mandan villages was the amount of interethnic trade that occured, partially as a result of the surpluses of horticultural produce stored at these centers (Lehmer, 1971) and also as a result of the position of the villages midway between the spread of horses from the southwest and the spread of Euroamerican trade goods from Canada and Lake Superior (Jablow, 1954). Native American speciality items such as blankets, quilled and

painted robes, albino buffalo hides, catlinite pipes, and prairie turnip flour also were traded, and the older import of dentalium and abalone shells and export of produce and Knife River flint was continued. Historic documents indicate groups and individuals of the Arikara, Arahapo, Assiniboine, Cheyenne, Chippewa, Cree, Crow, Flathead, Kiowa, Shoshone, Teton, Yanctonai, and Yankton Sioux all traded at one time or another with the Hidatsa and Mandan at or near their villages.

c. History

Exaggerated reports of this native trade center first brought whites to the Hidatsa and Mandan villages. Because the more populous Mandan were centered at the Heart River this area was the first focus of Euroamerican interest. Expeditions by LaVerendrye and his sons in 1738 and 1742 resulted in the earliest published eyewitness accounts of direct white contact with the Mandans. Documentary sources (Nasatir, 1927-28, 1952) suggest that intermittent trade from Canadian posts began by the 1770's. Manard was the first "tenant trader" to live among the Hidatsa and Mandan. He lived with these peoples from 1778 until murdered by the Assinoboine in 1803 (Henry MS, Lewis and Clark, 1969). James Mackay visited the combined Hidatsa and Mandan at Knife River in 1787 (Nasatir, 1952). His maps were among those used by Lewis and Clark to reach this area.

The Canadian trade had intensified in 1793 with the construction of a post by the Hudson's Bay Company and both this company and the Northwest Company began to send as many as two expeditions south each year. Renee Jessaume of the Northwest Company, perhaps as a result of this trade "war", built in 1794 "a small fort and hut between the Mandan and Gros Ventre villages" (Nasatir, 1952-64). This post was confiscated for the Spanish in 1796 by John Evans (Nasatir, 1952). Jessaume then became a tenant trader with the Mandan while Toussaint Charbonneau joined the Awatixa Hidatsa in the same capacity in 1797. During the year David Thompson (Wood ND, 1916) visited the Hidatsa and Mandan villages and a description of the villages was written by MacKay to accompany a map prepared by Evans (Nasatir, 1952). By the early 1800's the Hidatsa and Mandan had a good understanding of white traders, having dealt with the rival Northwest and Hudson Bay companies and with Spanish traders, and no longer extended the ritual greeting granted LaVerendrye and MacKay of carrying visitors into the village on a buffalo robe. With other Native Americans, however, traditional trading rituals such as ceremonial adoption were still carried on (Henry MS, LaRocqie, 1969).

The Louisiana Purchase of 1803 and the appearance of the Lewis and Clark Expedition the following year brought the pressence of the United States to the Knife River Indian Villages for the first time. The expedition first camped opposite the Hidatsa village on the east bank of the Missouri River and then dropped several miles down river to build Fort Mandan below the Mandan villages. Jessaume and Charbonneau were hired as translators and moved to Fort Mandan with their families. Charbonneau, Sakakawea (one of his two Shoshone slave wives) and her infant son Baptiste ("Pompey" to William Clark) would accompany the expedition to the Pacific and then return. On this return

Jessaune would accompany the Mandan chief Big White on his journey to Washington between 1806 and 1809. The description of the Hidatsa villages given by members of the Lewis and Clark Expedition are poor, perhaps because they made only a few trips to the Hidatsa summer villages. Of more importance are the description of the villages and Native American highways given on the contemporary accounts of LaRocque (1910, 1960) in 1805 and 1806, Mackenzie (1960) during visit in 1805, 1806 and 1807, and by Henry (1897, MS) in 1806. The Henry account is notable for the "photographic" descriptions he gives and that of LaRocque for the 18 months he resided with the Hidatsa and Mandan (1960) and his 6 months with the Crows (1910).

One product of the Lewis and Clark expedition was the opening of the Missouri River from St. Louis. In 1810 Manuel Lisa built a post seven miles north of the Big Hidatsa village and on the opposite side of the Missouri, but it was abandoned by 1812 due to hostile Sioux. The American presence on the upper Missouri was severely curtailed by the war of 1812, but British-Canadian traders would continue to visit the Hidatsa and Mandan village at the Knife River to acquire produce until the establishment of the Red River settlement in 1818 provided an alternative vegetable food source.

The year 1831 saw the construction of Fort Clark by the American Fur Company and the begining of steamboat travel into the area. Catlin (1973) traveled north in 1832, followed by Maximillian and Bodmer (1966; and Thomas and Ronnefeldt, 1976) during 1833 and 1834. These two expeditions provide the most complete descriptions of the Hidatsa and Mandan since the early 1800's and are of particular value in their artistic illustrations of Native America life during this period. The year 1834 brought the temporary abandonment and destruction of the Sakakawea and Anahami villages by the Sioux (Stewart, 1974), and the smallpox epidemic of 1837-1838 brought massive mortality and sociocultural disruption among these peoples. The remnant Hidatsa and most of the Mandan abandoned the area of the Knife River Indian Villages in 1845 to reestablish themselves at Like-a-Fishhook village at Fort Berthold.

d. Present Archeological Research

Archeological research within the boundaries of the park began with the mapping and testing carried on by the State Historical Society of North Dakota between 1907 and 1909 (Stienbrueck, 1907). This work was accomplished before heavy ground disturbance was caused by modern agriculture and forms a basic statement on the historical features of the Knife River Indian Villages National Historic Site. Surface collections were made during the 1930's and 1940's by the State and by Bowers. From the 1930's to the 1970's various professional and amateur excavations were conducted. In 1976 and 1977 major portions of the archeological field work carried on in the park by the National Park Service and University of North Dakota were directly aimed at the eroding Sakakawea Village. Work in 1977 and 1978 began the first systematic cultural resources inventory in and around the Knife River Indian Villages National Historic Site. Preliminary findings, discussed in a large part above, demonstrate that these resources are much more rich and varied than previously thought or indicated in the Knife River Indian Villages Master Plan.

This cultural resources inventory is a still ongoing project carried on under Dr. Stanley A. Ahler's (1978a) research program. An innovative application of a point-quarter sampling system has resulted in the computerized mapping of a portion of the park (see Known Archeological Resources Map). The supposition underlying this sampling method is that buried cultural resources, when present, will be carried to ground surface by agricultural and rodent activity. In cultivated areas this works perfectly, but in uncultivated areas the data results rely on the additional localized variable of rodent activity. Localized clusters of artifacts mapped in uncultivated field areas may either represent clusters of human or of rodent activity.

In 1979 Dr. Ahler extended his research to an intensive archeological testing and evaluation program. The results are discussed below for each alternative (Ahler, 1979).

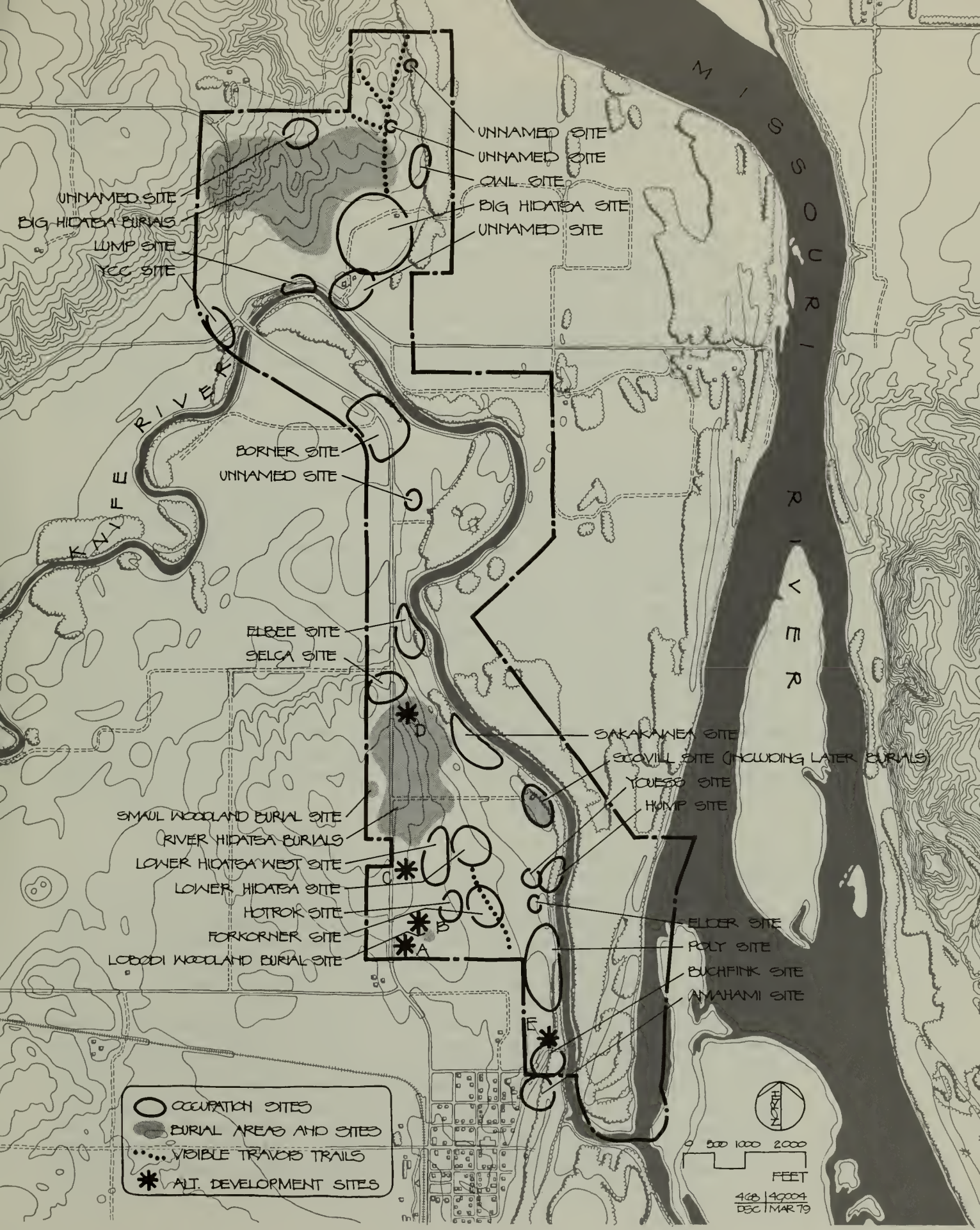
A second research project is being carried on by the Midwest Archeological Center in cooperation with the University of Nebraska. This is primarily a remote sensing operation, with a proton magnetometer being used to measure differences in the earth's magnetic field, although infra-red photography and applications of electrical resistivity also have been used. This pilot study has resulted in computer maps of portions of several sites within the park. Validation of findings from the proton magnetometer study are being conducted through test excavations and refinements in the sensor technology are continuing.

A third research project deals with a geomorphological study of the Missouri and Knife River terraces within the park, and is carried on by the University of North Dakota.

e. Visitor/Administrative Facility Sites

A portion of Dr. Ahler's 1978 field season concerned four preliminary visitor/administrative center facility locations (Ahler, 1978b). Through test excavation and surface reconnaissance Ahler was able to distinguish that two of these sites were within historic Hidatsa cemeteries. One of the preliminary sites contained what is probably a small and highly localized Woodland burial location and the fourth site contained a significant village. Due to these preliminary research findings other alternate visitor/administrative facility sites were selected in December 1978. These are the ones being analyzed in this assessment (see Alternative Development Sites Map in Section III, C). The archeological testing and evaluation program carried out during the 1979 field season was extensive at two sites, less intensive at a third, and the fourth site was held in abeyance because of the readily observable high density of cultural remains on the surface. The results of this testing are discussed in the alternative descriptions below. A fifth site was not evaluated for cultural remains because much of it has been disturbed or destroyed previously by gravel mining.

All five alternative visitor facility locations are on or near an elevated hillside terrace. This area has been examined by the point-quarter survey method and is included in the computer map of the Knife River Indian Villages National Historic Site. The Known Archeological Resources Map is a compilation of best information presently



KNOWN ARCHEOLOGICAL RESOURCES

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known about the archeological resources. Information from former park archeologist John Taylor, from a March, 1979 letter from Dr. Ahler, and from the 1979 tests (Ahler, 1979) has been used in formulating the following descriptions of each site.

Alternative A:

This location is in a very low density area of cultural resources. Only one site, the small and highly localized Woodland Period burial, is near this location. The possibility of additional material below the plow zone, which would not be well represented in the point quarter survey system, appears also to be low. The archeological testing indicated that cultural materials in the plow zone deposits are "of such low density that they are not likely to be interpretable". No cultural materials were found below the plow zone (Ahler, 1979).

Alternative B:

This location is in a very low to moderate density area of cultural resources. This location is bordered on the east by a very high artifact density area, a dense cluster of firecracked rock which has been tentatively associated by Ahler (1978b) as a special activity area of the Lower Hidatsa Village site. To the north this site enters the Lower Hidatsa West site, preliminarily identified as a westward continuation of the Lower Hidatsa Village site. No dense artifact concentrations are within Alternative B from the Lower Hidatsa West site. This area potentially could be of significance to the Awatixa, Hidatsa/ Crow Schism discussed above. The 1979 intensive archeological testing of this alternative indicated that the plow zone cultural deposits in this area are "of such low density that they are not likely to be interpretable." However, one cultural feature, the base of an ash concentration, was found under the plow zone (Ahler, 1979). The possibility of additional cultural material below the plow zone appears to be moderate.

Alternative C:

Alternative C is within an area of moderate to high artifact density identified as an outlier of the Lower Hidatsa West site. The very heavy artifact density areas of this archeological site are not involved. "The surface materials are known to exhibit a spatial patterning of areas of high and low density which differ also in artifact content... No surface evidence of human burials has been seen in this area, but its proximity to the known burial area 100-200 meters to the north, increases the possibility of human burials in Area C" (letter from Dr. Ahler, March 5, 1979, to Dr. Calabrese of the Midwest Archeological Center). Investigations during the 1979 intensive archeological testing of Alternative C yielded major densities of artifactual materials within the plow zone and delineated several areas of concentration. Seventeen subplow zone features of several different kinds were located during the investigation of Area C. One of these features, a small, shallow pit, contained a human infant burial. Based on the frequency with which

sub-plow zone features were encountered during this sampling program, Ahler estimated that approximately 150 such features could exist in the Area C location, and some of them may contain additional burials (Ahler, 1979). Immediately west of the site, located in the northeast corner of the Stanton cemetery, are the probable remains of an Hidatsa Sun-Dance structure. Such structures were commonly located near cemetery areas. A cultural resource inventory sampling design especially directed to the location of burial features has not yet been accomplished. However, proton magnetometer survey of this area did not result in the discovery of any deep human burial pits as would be expected if Area C did lie in a cemetary area related to one of the major villages (Ahler, 1979). Patination rates on flint recovered from this area suggest a moderate possibility of Woodland or Archaic sites in this location in addition to the known protohistoric and historic sites.

Alternative D:

Alternative D is situated west of and partially within a very high concentration of cultural debris. Because the ground surface has not been cultivated the artifact clustering identified by the point quarter survey methods may idicate rodent activity and slope erosion. It can be strongly suggested that some of this cultural debris is a direct continuation of a site to the west that is Archaic and extends below most of location D. In addition to this early cultural material the site is located on the as yet unidentified northern margins of the Hibodi cemetery site and could possibly also contain human burials. No test excavations nor any sampling have yet been carried out in location D, but a sample protonmagnetometer survey was done 75 meters south of this location. In a 5 by 75 meter sweep 12 possible burial pits were located. Given this information, location D can be suggested to have a moderate to high potential for burials. "The prominent, elevated topographic setting of this area make it a likely spot for preceramic materials to be found, and also a likely place for village-related burials or temporary encampments of nomadic trading groups to be located. Since this area has not been cultivated, it is likely that undisturbed cultural features will occur here just below the ground surface or sod cover. In sum, it is highly likely that this area will show evidence of multiple uses and occupations..." (letter from Dr. Ahler, March 5, 1979, to Dr. Calabrese of the Midwest Archeological Center). The parameters of the 1979 archeological testing indicated that "Area D was to be...investigated only if discoveries in Area B and C prohibited consideration of either location for visitor facility construction" (Ahler 1979). This was because Area D is known to contain extensive surface material and is the probable location of burial remains.

Alternative E:

Alternative E is situated in the southern end of the historic site a few hundred feet northeast of Stanton. It was not tested during the 1979 field season because about one acre of this area has been thoroughly disturbed by gravel mining and virtually all archeological material in this area has been destroyed.

The significance of archeological resources on the land outside the previously mined area is uncertain. However, the occurance of significant archeological materials is probable. A 1976 magnetic investigation showed no major anomalies, yet the area was not magnetically uniform. Most of this area was cultivated in historic times and cultural resources in the plow zone have been disturbed. However, a 1979 point-quarter survey showed the presence of surface materials. Finding sub-surface material is quite likely.

2. Climate

Average annual temperature is near 40 degrees Fahrenheit with extremes of 95 degrees Fahrenheit in the summer and minus 30 degrees in the winter. Annual precipitation is 15 inches, with a mean annual snowfall of two feet. The frost line can extend as deep as 7 feet in the winter. Sustained high winds predominately from the northwest cause snow drifting during the winter. Some winter winds come with storms out of the east. The average winter wind speed is approximately 10.5 miles per hour (mph). Annually the prevailing winds are predominately from the west north-west, however, winds from the east occur nearly as often. Winds blow at an average annual speed of 11 miles per hour, with a maximum of 72 miles per hour from the west.

The maximum heating requirement occurs in January, when the normal total heating degree days for the month at the national historic site area is approximately 1800. The annual normal total heating degree days is approximately 9000. The mean daily solar radiation for January is 157 Langley units (gram calories per square centimeter). The annual mean daily solar radiation is 370 Langley units. Mean percent of possible sunshine ranges from an average of 45 percent in December to 75 percent in July, with an annual average of 60 percent (U.S. Department of Commerce, Environmental Science Services Administration, 1968).

The air quality is good. Measured concentrations of contaminants are less than the Federal Primary and Secondary Ambient Air Quality Standards. Sources of contaminants in the region include road traffic, construction, mining activities, refineries, and electric power generation. (U.S. Department of Interior, Bureau of Land Management, 1978).

3. Geology and Soils

Bedrock in the area consists of limestone, shales, sandstones, and conglomerate. There are no known active faults in the area, and risk of damage to structures in the area due to seismic activity is slight. There is a potential for minor damage to structures from earthquakes with intensities of V and VI on the Modified Mercalli Intensity Scale of 1931.

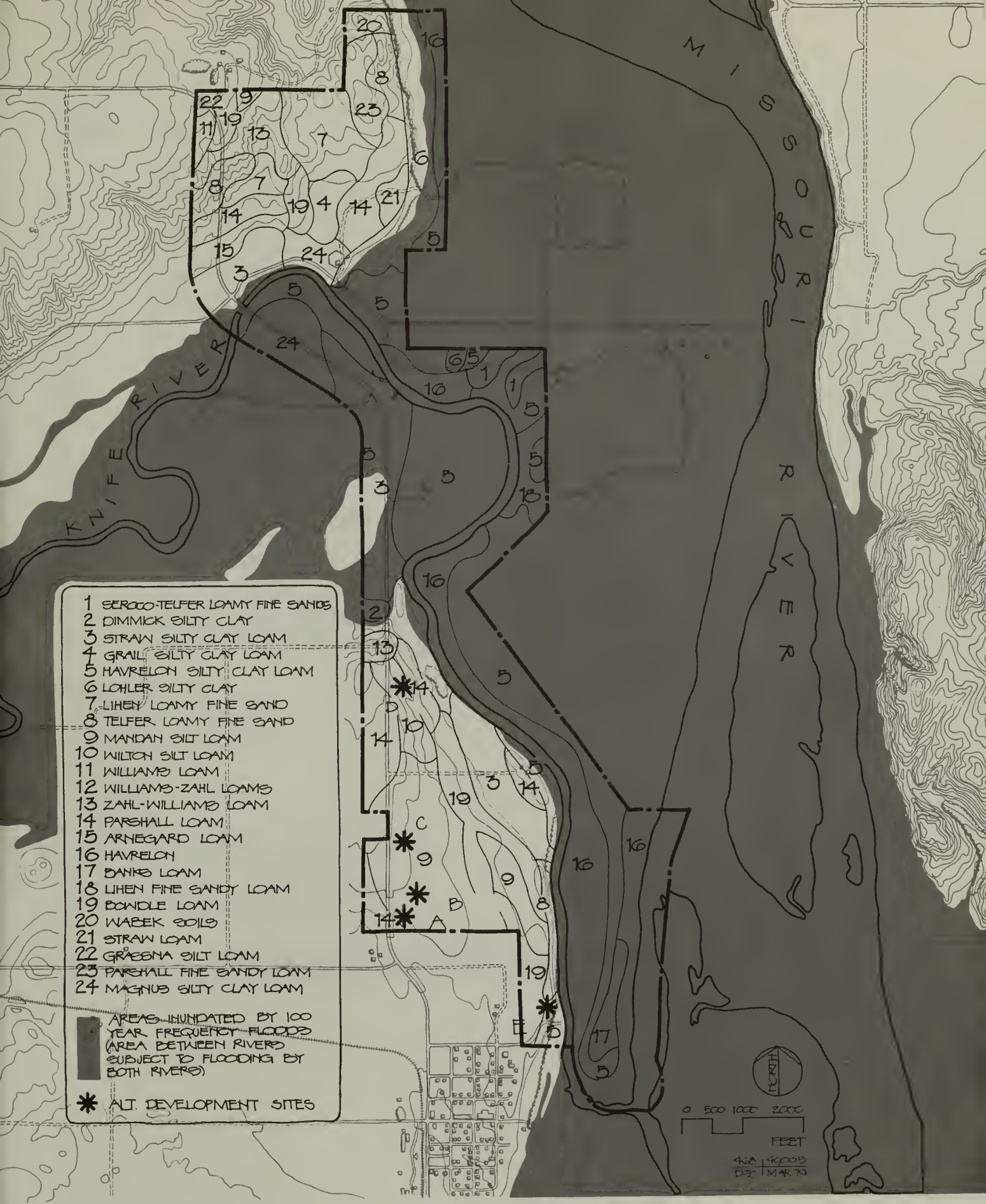
Terraces bordering the Knife and Missouri Rivers mark distinct periods of erosion and represent a scouring or cutting into bedrock by a stream as it meanders across the valley floor and then deposits a valley fill of floodplain deposits. Valley fill includes

stream channel deposits, natural levee deposits of the flood periods. The stream channel is an area of scouring during high flow periods and deposition during low flow periods (Carlson, 1973).

Carbon-14 dating of some of the cutbank terraces was done during the 1979 field season. The preliminiary age determinations resulting from these tests follows - A Terrace, Taylor Bluff, 3417 $\pm$ 75 B.P.; A Terrace, Elbee Bluff, 2961 $\pm$ 71 B.P.; and B Terrance, Madman Bluff, 1118 $\pm$ 86 B. P. (Ahler, 1979).

Soils within the Knife River Indian Villages National Historic Stie generally have moderate to severe limitations with respect to buildings, roads, and septic systems, with the exception of soils to the north and east of the Knife River along the flood plain, or in areas too limited for the location of the proposed project. An exception to this is the Parshall soil (No. 13) which lies along the southwestern boundary.

Soils within the national historic site area are shown on the Soils and Floodplains Map and their properties are listed in the Soils Table. Soils at Alternatives A, B, and C are Mandan silt loams with slopes of 1 to 6 percent (See Alternative Development Sites Map). They are deep, well drained, moderately permeable soils on loess-covered uplands, with moderate building limitations due to low soil strength, frost action, and low water percolation rate. The soils at the Alternative D site are of two types: Wilton silt loam and Parshall loam. The Wilton silt loam is a deep, well drained soil on loess-mantled glacial till uplands with moderate building limitations due to low soil strength, and shrinking and swelling of the soil. There are severe limitations on septic systems due to low soil permeability. The Parshall loam is a deep, well drained, moderately rapidly permeable soil with 1 to 6 percent slopes generally located on terraces and outwash plains and upland swales. It is well suited to building site development and septic tank absorption fields. Part of Site E has been mined for gravel and the remaining soils are Havrelson silty clay loam. These soils have moderate building limitations due to shrink/swell capabilities and low soil strength. There are moderate limitations for septic systems due to low soil permeability, and severe limitations for road construction due to low soil strength. (U. S. Dept. of Agriculture, Soil Conservation Service, 1979).



SOILS AND FLOODPLAINS

KNIFE RIVER INDIAN VILLAGES NATIONAL HISTORIC SITE

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SOILS TABLE

Soil No.	Soil Name	Limitations		
		Buildings	Septic Tanks	Roads
1	Seroco-Telfer loamy fine sands	2A	2A	2A
2	Dimmick silty clay	3C,D,E	3C,D,G	3C,D,F
3	Straw silty clay loam	3C	3C	3C
4	Grail silty clay loam	3E,F	3G	3F
5	Havrelon silty clay loam	2E,F	2G	3F
6	Lohler silty clay	3E,F	3C,G	3E,F
7	Lihen loamy fine sand	1	1	1
8	Telfer loamy fine sand	2A	2A	2A
9	Mandon silt loam	2F	2G	2F,H
10	Wilton silt loam	2E,F	3G	2H,F
11	Williams loam	2E,F	3G	3F
12	Williams-Zahl loams	2E,F	3G	3F
13	Zahl-Williams loam	2A,E,F	3G	3F
14	Parshall loam	1	1	2F,H
15	Arnegard loam	2F	2G	2F,H
16	Havrelon loam	2E,F	2G	3F
17	Banks loam	3C	3C	3C
18	Lihen fine sandy loam	1	1	1
19	Bowdle loam	1	1	1
20	Wabek soils	2A	2A	2A
21	Straw loam	3C	3C	3C
22	Grassna silt loam	2E,F	2G	3F
23	Parshall fine sandy loam	1	1	2F,H
24	Magnus silty clay loam	3C,E,	3E,F	

Limitations Codes
1 - Slight limitations
2 - Moderate limitations
3 - Severe limitations
A - Steep slopes
B - Seepage of water
C - Floods
D - Wetness problems
E - Shrinking and swelling of the soil
F - Low strength of soil
G - Low percolation rate of water
H - Frost action in soil

Adapted From: Soil Survey of Mercer County, North Dakota (U.S. Department of Agriculture, Soil Conservation Service, 1979).

4. Knife and Missouri River Hydrology

a. Surface Water

The Knife River flows into the Missouri River at Stanton, near the southeast corner of the national historic site. Release of water from Lake Sakakawea through the Garrison Dam is the primary source of the flow in the Missouri River; however, inflow from the Knife River modifies the streamflow pattern. The Knife River, essentially an unregulated stream, has a high runoff from snowmelt in late winter and a second peak flow in late spring. Low flows occasionally approach pool stage (U.S. Department of Interior, Bureau of Land Management, 1978).

Most of the national historic site lies within the 100 year floodplain, with the exception of the northern and southwestern portions of the area, as shown on the Soils and Floodplains Map (U.S. Department of Agriculture, Soil Conservation Service, 1977). All four alternative development sites are out of the 100 year floodplain.

b. Ground Water

Ground water in the national historic site area is generally available from glaciofluvial sands and gravels from a depth of 30 to 250 feet (Croft, 1973). Yields to wells range from 100 to 150 gallons per minute. Ground water contains high concentrations of iron (4.9 ppm), sulfate (674 ppm), and total dissolved solids (1400 ppm, Croft, 1973). This exceeds recommended drinking water standards if an alternate source is available. Obtaining water from the town of Stanton would be possible in the southwest section of the historic site where developments are proposed.

5. Ecology

The historic vegetation of Knife River Indian Village National Historic Site was mid grass prairie and riparian woodland. Most of the woodland along the Knife and Missouri Rivers still persists and accounts for approximately one-third of the site's acreage. The other two-thirds were native prairie but about one-third of this grassland has been cultivated for crop production and the remainder used as pasture for livestock to help restore the historic scene. The National Park Service plans to allow the cultivated land to revert to grassland. These cultivated fields are presently in the early stages of succession and are dominated by weedy grasses and forbs. The prairie that was not cultivated is dominated by species such as green needle grass, needle-andthread, little bluestem, western wheatgrass, side-oats gramma, and Canadian wildrye. In the riparian woodland common overstory species include river oak, green ash, aspen, box elder, elm, cottonwood, and peachleaved willow.

The wildlife that inhabit the grassland, old cultivated field, and riparian woodland are typical for these habitats. Common species include whitetail deer, cottontail rabbit, thirteen-lined ground squirrel, northern pocket gopther, sharptail grouse, raccoon, meadowlark, beaver, and muskrat. Hungarian partidge, ring necked pheasant, wild turkey, various species of waterbirds and raptors, mink, coyote, and bobcat may all be found to range through the area.

The only threatened or endangered (federal list) plant or animal species known on the site is the bald eagle. It is a spring and fall migrant in the area. The State of North Dakota also lists the river otter as "rare or endangered" on their state list. Although there are no recent records of the otter in the area they may occur in the Missouri River watershed. None of the plants on the state's list of "rare and unique" plants are found in the vicinity of the historic site.

Three of the five proposed visitor center Sites (A, B, and C) are in old cultivated fields, one is partially in old cultivated field and partially in an abandoned gravel mine (Site E) and the fifth (site D) is in old grassland pasture. This last site is more ecologically diverse than the others and has much greater productivity. However, given enough time, the other sites in old cultivated fields have the potential to develop to a grassland as productive and diverse as the existing site. These sites are not critical or significant habitat, are not particularly different from each other ecologically (except in their level of ecological succession), nor are they especially sensitive ecologically.

6. Land Classification

The land classification established in the Knife River Indian Village Master Plan (approved February, 1978) has been superseded by the land classification as presented in the Statement of Management (approved June, 1978). Accordingly the entire area is classified and managed as a historic zone. Thus, development subzones will be identified once a visitor center/administration/maintenance site is selected. The Management Policies of the National Park Service specify that, "Physical development in historic zones shall be the minimum needed for preservation and interpretation of cultural values."

7. Visitor Use

Since Knife River Indian Villages is a relatively new area (established in 1974) in the National Park System, there is no visitation data to determine visitation trends. Also, there are not yet any visitor facilities or interpretive programs that would attract visitors to the area. Therefore, data were used from Pipestone National Monument (similar setting and similar degree of attraction) to estimate future visitation for Knife River Indian Villages. The projection is shown in the following table.

PROJECTED VISITATION FOR KNIFE RIVER INDIAN VILLAGES

Year	Visitation	Increase (Percent)	People Per Vehicle*	Vehicles Per Year	Vehicles Per Day
1**	48,100	base year	3.5	13,743	37.65
2	51,900	8.46	3.5	14,829	40.62
3	55,600	9.06	3.5	15,885	43.52
4	59.300	9.67	3.5	10,942	46.41
5	63,100	10.29	3.5	18,028	49.39
10	85,700	13.97	3.5	24,485	67.08

* The first year the area has visitor facilities.

** Per North Dakota State Highway Department.

Assuming 75 percent of the visitation during 60 days during the summer, the visitation and vehicles per day for that peak season would be:

Year	Visitation/Day	Vehicles/Day
1	601	172
2	649	185
3	695	199
4	741	212
5	789	225
10	1071	306

III. DESCRIPTION OF ALTERNATIVES AND IMPACTS

A. Development Program

The development program is a summary of those facilities which were determined to be appropriate to accommodate the interpretive, administrative and maintenance needs identified in the introduction. These facilities represent a preliminary estimate which will be subject to adjustment as design of the proposed facilities becomes more specific.

1. Visitor Facility that will include interpretive, administrative, and maintenance facilities and be designed to minimize energy consumption and be accessible by handicapped people.

Audio visual area (for 35-50 persons)*	300-600 sq ft
Interpretation, information & Orientation*	1,000-2,000 sq ft
Offices (6), library & conference room	700-1,000 sq ft
Laboratory, storage & mechanical areas	1,000-1,500 sq ft
Maintenance area & storage	600-800 sq ft
Vehicle garage (2 bays)	300-500 sq ft
Restrooms	300-500 sq ft
Total	4,200-6,300 sq ft

* Portion of this function may occur outdoors, thus farther reducing building area.

2. Parking with curbing for 50 cars and 2 buses to be designed with flexability to accommodate large recreation vehicles.

3. Entrance Road to be 22' wide with curbing and 3' shoulder and have an enterance gate and sign.

4. Trails and walks from the Visitor Center to the archeological sites as required (approximately 2 miles of 6' wide all weather surface trail). These will be designed to be accessable by handicapped people.

5. Utilities needed for the visitor facility include: (1) electricity, obtained from Oliver-Mercer Rural Electric, will be brought to the building by underground cable buried along the entrance road and along trails if low profile lighting or audio-visual aids are necessary; (2) water and sewer, obtained from the City of Stanton, will require extending lines along the county and entrance roads from Stanton to the selected site; (3) telephone lines will be buried along the entrance road.

B. Development Concept

The development concept is a diagrammatic representation of those functional relationships and circulation patterns which were determined to be appropriate for the facilities included in the development program. The purpose of the development concept was to provide a conceptual framework for the design of the Visitor Center complex, to be modified as necessary to fit specific site conditions.

As shown graphically (see Development Concept Map), the major features of the Development Concept are as follows.

1. The Visitor Center should be located to provide unobstructed visual and pedestrian access to those archeological sites determined to be most significant.

2. Parking should be located between the Visitor Center and the county road and should be hidden as much as possible from the archeological sites.

3. The vehicular approach to the Visitor Center should provide for an attractive view of the building and visitor entrance. Ideally this view should not be across the parking area.

4. Circulation within the parking area should be counter clockwise, allowing for drop offs at the Visitor Center entrance for vehicles entering the parking area.

5. The primary Visitor Center entrance should face south away from prevailing cold winter winds, and toward the winter sun.

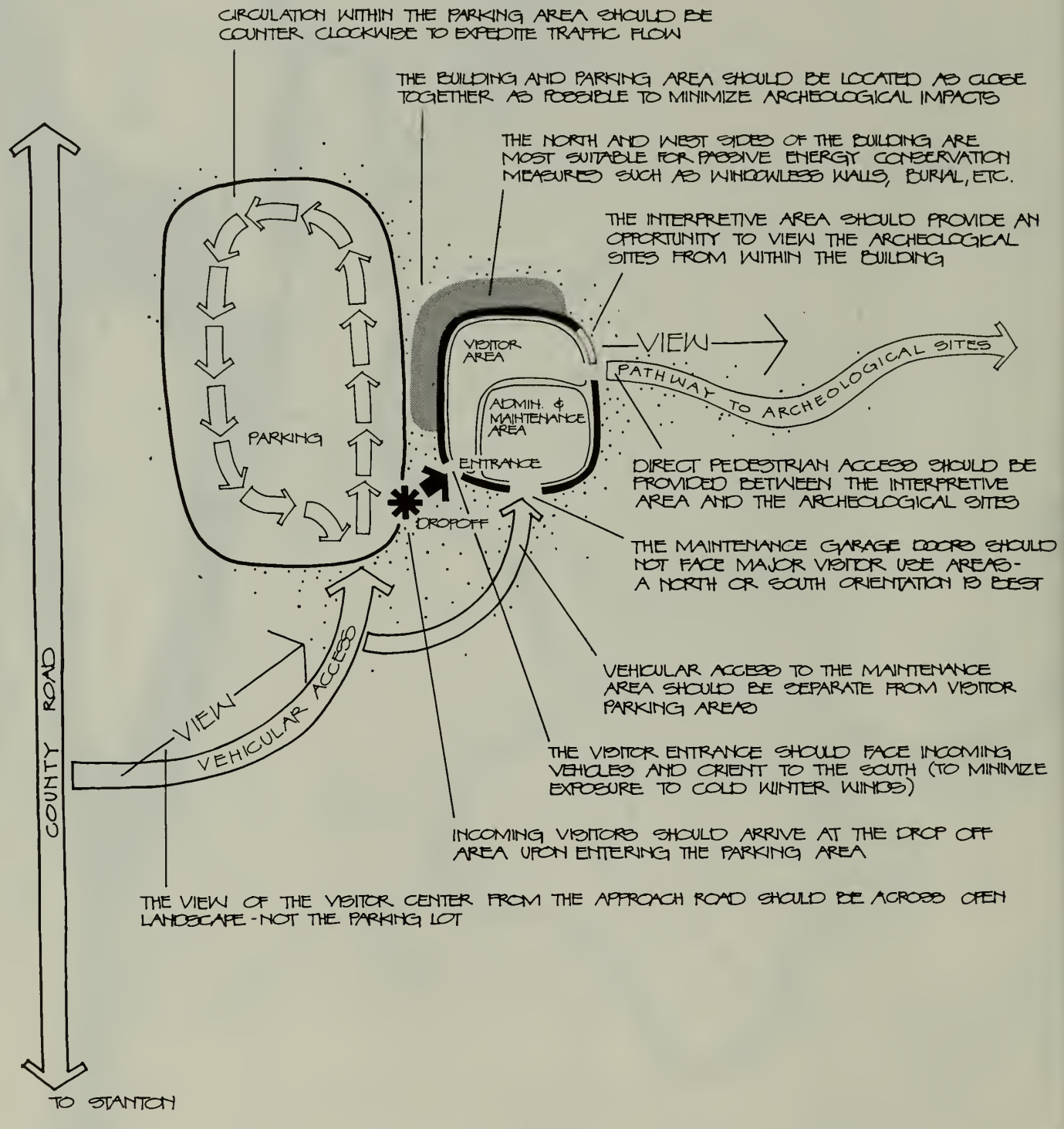
6. The maintenance area should have separate vehicular access clearly differentiated from visitor parking. This area should be located out of the view of visitors as much as possible to minimize visitor exposure to maintenance activities.

7. Since the north and west sides of the Visitor Center will be most exposed to cold winter winds, these building edges are most appropriate for special energy conservation treatment such as berming, blank walls, etc.

C. Alternative Sites

Five sites are analyzed for the visitor/administrative/maintenance facility. Sites were not considered north and east of the Knife River because this would force the vast majority of visitors (coming north through Stanton) to pass most of the archeologic and historic sites before reaching the visitor facility. Sites in Stanton were not considered because fewer visitors would stop at a facility in town, more patrols would be needed to protect the resources, the potential use of some interpretive media would be constrained, and the transition between the visitor facility and the sites would be awkward.

The five sites (see Alternative Development Sites Map) were selected to fulfill several criteria such as avoiding floodplains and significant known archeological resources, and being near the major archeological resources for enhanced interpretation, visitor use, and resource protection. The tradeoffs among these criteria and others such as environmental impacts that are being considered in site selection will be analyzed below.



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DEVELOPMENT CONCEPTS

KNIFE RIVER INDIAN VILLAGES NATIONAL HISTORIC SITE

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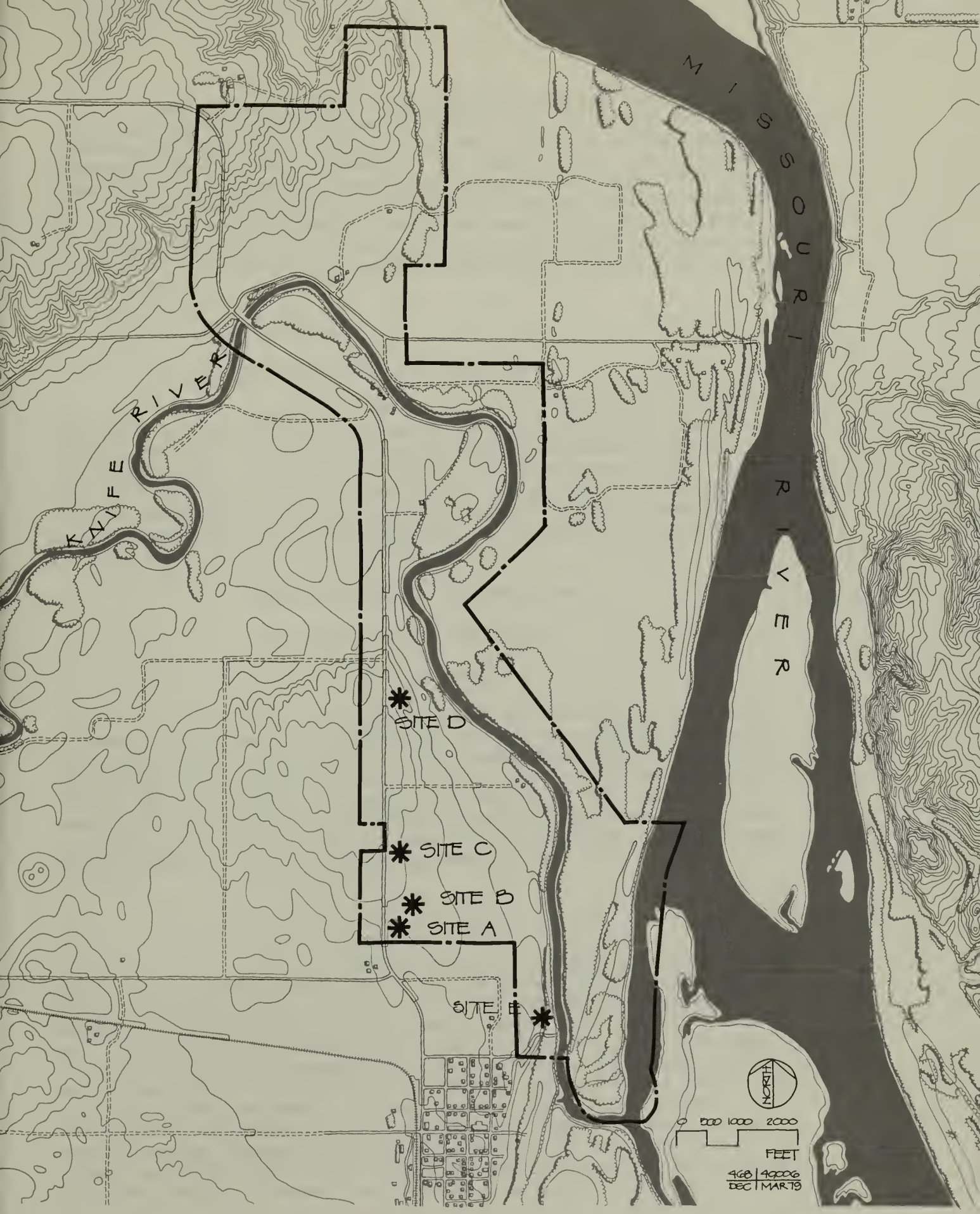

ALTERNATIVE DEVELOPMENT SITES

KNIFE RIVER INDIAN VILLAGES NATIONAL HISTORIC SITE

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Knife River Indian Villages National Historic Site is listed in the National Register of Historic Places. Therefore, any undertaking affecting the site must comply with Section 106 of the National Historic Preservation Act of 1966, as amended. As described previously, archeological surveys have been performed on all alternative visitor facility locations, and information from those surveys has been used in formulating the alternative site proposals. The North Dakota State Historic Preservation Officer and the Advisory Council on Historic Preservation will be provided an opportunity to comment on the final proposal, in accordance with 36 CFR 800.

1. Alternative A

a. Description of the Alternative

Construct a new visitor facility that also includes administrative and maintenance areas as previously described (see Development Program). The site is located in the southwest portion of the national historic site (see Alternative Development Sites Map). This site was selected for its apparent lack of archeological resources. The proposed development has been tightly designed between the county road, southern national historic site boundary, and a small but important archeological site (see Alternative A Map).

b. Impacts and Design Considerations

(1) Impacts on the Environment

(a) Cultural Resources

Based on relatively intense surface examinations and representative subsurface testing for cultural materials, this location is least likely to contain subsurface cultural features or significant cultural materials in the plow zone. It is also unlikely to contain these materials at deeper levels (Ahler, 1979). Therefore, impacts on archeological resources are expected to be slight. However, possible accidental disruption or destruction of unknown, buried archeological resources could occur during construction.

(b) Natural Resources

Construction of the visitor facility, paved areas, and extension of utility lines from present service areas will disturb approximately 3.5 acres. Due to the relatively level topography, little soil erosion and stream siltation will result. Surface soil horizons will be compacted, covered, or destroyed over this area. The effects of this disturbance will be less severe under this alternative than under Alternative D, and will not be significant since these soils have been previously disturbed by many years of agriculture cultivation. Approximately 3.5 acres of weedy vegetation will be destroyed; however, this sparse vegetative cover is in early succession stages and is of little value to wildlife or in controlling soil erosion. Relatively few small mammals and birds will be disturbed by the

construction activities compared to Alternative D, because the past history of cultivation resulting in weedy sparse vegetation is poor habitat for most species.

There are no threatened or endangered plant or animal species in the project area that would be affected by the project.

(c) Socioeconomic Environment

The proposed construction will have a minor positive short-term effect on the economy of the region due to jobs and sales created by the construction project. In the long-term, there will be increased traffic through Stanton with a resulting increased demand for goods and services that will boost the local economy. The site is on the route to Lake Sakakwea, a popular local attraction. The demand on Stanton and Mercer County to provide improved roads, traffic flow, parking, police protection, etc., and demand on the private sector to provide lodging, meals, supplies, etc. will have a significant long-term impact. There is virtually no tourist traffic through Stanton at present, but 85,000 visitors per year are projected ten years after the visitor center is built. It is not known if the increased tax base resulting from tourism will compensate for the increased demands on that tax base for public improvements. However, from similar situations near other National Park Service areas, Stanton and Mercer County are expected to benefit.

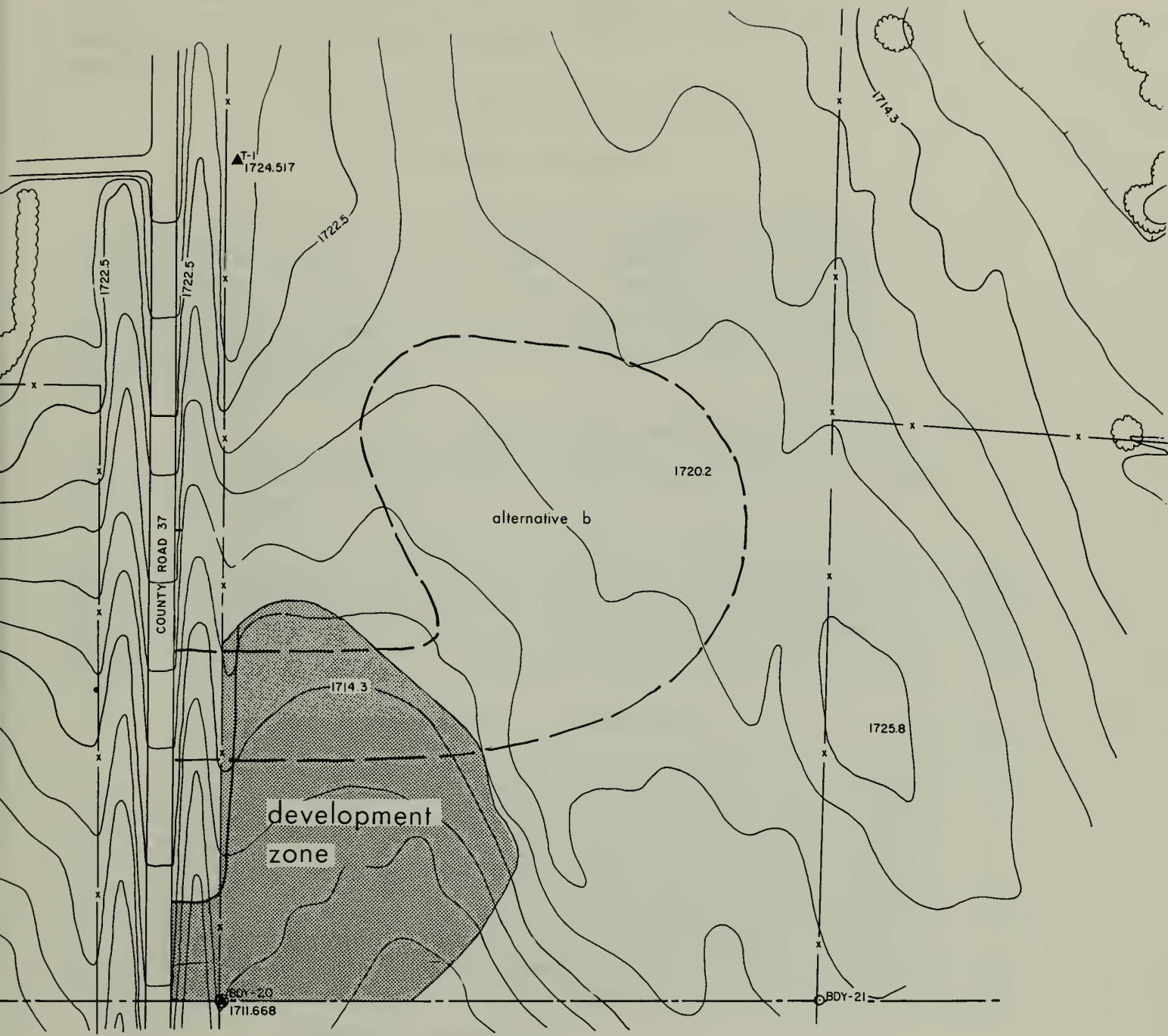
(d) Interpretation/Visitor Experience

Of the five sites this one and Site E have the most constraints and limitations on interpretation and visitor experience. For example, the Sakakawea site will be the greatest interest to most visitors, yet Site A is farther away from the Sakakawea site than the other alternative visitor facility sites except Site E. Trails from Site A to the Sakakawea Village site will be approximately .70 mile long. Some visitors will not be willing to travel that distance to visit the Sakakawea site. Site A, on the other hand, is conveniently close (about .2 mile) to the main resources of the Lower Hidatsa site.

Additionally, the Lower Hidatsa and Sakakawea sites are not visible from Site A, thus prohibiting the use of any interpretive media in the visitor facility that require visual contact with the resource. Use of audio stations along the trails is constrained with the visitor center located at Site A, because the audio stations would be more susceptible to vandalism (they would be out of sight of the visitor facility) and more difficult to maintain (they would be farther away and out of sight of the visitor facility). Any interpretive media that is susceptible to vandalism should probably not be used along the trails, since the trails will not be visible from Site A.

(e) Administrative Considerations

This location provides poor protection of



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ALTERNATIVE A

KNIFE RIVER INDIAN VILLAGES NATIONAL HISTORIC SITE

UNITED STATES DEPARTMENT OF THE INTERIOR NATIONAL PARK SERVICE

the archeological sites since they are not visible from this site. Patrols by rangers on foot or in vehicles will be required to compensate for this. Even with increased ranger patrols, there is a greater potential for vandalism and destruction of archeological resources under this alternative than under most of the other alternative site locations because of the less pronounced "presence" of National Park Service personnel.

(2) Design Considerations and Impacts

(a) Design Relationships

Extension of water and sewer utility lines to this location from present service areas in Stanton will incur a minimum of costs compared with the other alternatives except Alternative E which will cost about one-third the amount needed for Alternative A. No sewage pumping stations will be required to connect with existing sewer mains serving Stanton. Ponding of surface water and drainage problems may be encountered since this alternative site is located in a slight topographic depression.

The relative float nature of Site A lends itself to a one-story building design (see Alternative A Map), and is ideal for access of handicapped persons in that special building designs will not be required.

The short approach road does not allow adequate decisionmaking time for drivers who have to decide where they must park and enter the building. However, the traffic circulation pattern achieves the desired objectives discussed under "Development Concept" earlier, except that no view of the archeological sites will be obtained.

(b) Aesthetic Relationships

This alternative site location is adjacent to the south and west boundaries, making it susceptible to the effects on non-compatible land use changes outside the boundary. Site A is only a few feet from the southern boundary and the visitor facility would be about 150 feet away. Non-compatible land uses on this private land to the south would have a significant adverse effect on the visitor facility at Site A. Site A also abuts County Road 37 which carries much non-park traffic and conflicts with the historic scene. Stanton, the two nearby power plants, and coal strip mines are visible from this location and will also conflict with the historic scene.

c. Mitigating Measures

(1) Cultural Resources

All ground-disturbing or ground-obscuring activites within the KNRI are being planned in such a way that they do not occur upon or within the limits of any known significant archeological remains. However, initial ground-disturbing activities in Alternative A

will be monitored by a professional archeologist. If archeological resources are located in the course of construction, all work in the area will be halted until a professional archeological evaluation is made to determine appropriate avoidance or mitigating measures.

If during the course of an ongoing, duly authorized project within the KNRI, interred human skeletal remains are discovered, the project will be halted immediately and representatives of the Three Affiliated Tribes, the KNRI staff, Regional personnel, and appropriate professionals will be notified. The KNRI staff will meet with appropriate project officials, tribal members, archeologists, and possible State officials, to deter-mine a course of action that is mutually acceptable to the Affiliated Tribes, to the archeological community, and to the National Park Service.

(2) Natural Resources

Soils that are removed for construction will be stockpiled and used for berming elsewhere in the construction. To stabilize berm slopes and minimize soil erosion after construction is complete, native grassland plant species will be planted or seeded on all bare or disturbed soils.

(3) Administrative Considerations

Because none of the major archeological sites are visible from the proposed visitor facility, ranger patrols will be necessarily more frequent to maintain as adequate a level of protection as the other alternative sites.

(4) Design Considerations

To control the effects of non-compatible land uses on the private land immediately south of Site A, a vegetative screen of trees and shrubs could be used.

d. Unavoidable Adverse Effects

None of the major archeological sites are visible from this location. This creates problems in interpretation and protection of these archeological resources. Increased patrols by rangers will be required to maintain adequate resource protection. A greater potential for vandalism and destruction of archeological resources exists under this alternative than under the other alternative site location, because of the less prononunced "presence" of National Park Service personnel.

The short approach road does not allow adequate decisionmaking time for approaching drivers.

Adjoining the south boundary and being adjacent to the west boundary, this site is the most susceptible to the effects of non-compatible land use changes outside the boundary.

Site A abuts County Road 37 which carries much non-park traffic and conflicts with the historic scene. Additionally, the distant views of Stanton, power plants, and strip mines will conflict with the historic scene.

Archeological mitigation will alter the in-ground archeological resource/information base into an archival resource/information base, resulting in the loss of information.

e. Relationship Between Short-Term Uses and Long-Term Productivity

An opportunity for rewarding visitor use, while promoting the preservation and protection of the cultural resources, will be provided for the lifetime of the visitor facility. To accomplish these goals the ecological productivity of much of the site will be abolished by the visitor facility and associated pavement. Nevertheless, the ultimate ecological productivity of the site will not be affected, since the facility can be removed at some future time and the site easily restored to the same level of ecological development as it is in presently.

f. Irreversible and Irretrievable Commitment of Resources

This site will be irretrievably committed to use as a visitor facility for the lifetime of that facility. There will be no irreversible commitment of ecological resources, since the proposed facility can be removed at some future time and the site restored to the same level of ecological development as it is presently. However, archeological resources encountered during construction may be irreversibly disturbed. In addition, any excavation for archeological mitigation purposes would amount to an irreversible commitment of archeological resources.

2. Alternative B

a. Description of Alternative B

Construct a new visitor facility that also includes administrative and maintenance areas as previously described (see Development Program). The site is located in the southwest portion of the national historic site (see Alternative Development Sites Map). This site was selected because it was felt to be the best compromise between a site that will affect few if any significant archeological resources and will still have a view of major archeological sites. Site B is located to avoid a small but important archeological site, and is located just far enough east to get a view of the Lower Hidatsa archeological site (see Alternative B Map).

b. Impacts and Design Considerations

1. Impacts on the Environment

(a) Cultural Resources

Based on relatively intense surface examination and representative subsurface testing for cultural material, this location is more likely than Site A, but less likely than Sites C,

D, or E to contain subsurface cultural features or significant cultural materials in the plow zone. It is also unlikely to contain these materials at deeper levels (Ahler, 1979). An area tentatively identified as a special activity locus of the lower Hidatsa Village site may be disturbed. Mitigation costs are likely to be minor to moderately expensive for this alternative. Accidental disruption or destruction of unknown, buried archeological resources could occur during construction.

(b) Natural Resources

The impacts here would be similar to those for Alternative A, except 5.0 acres are involved instead of 3.5 acres.

There are no threatened or endangered plant or animal species in the project area that would be affected by this project.

(c) Socioeconomic Environment

Since Site B is quite close to Site A and also will be reached via County Road 37, the impacts on the socioeconomic environment will be practically the same as described for Alternative A.

(d) Interpretation/Visitor Experiences

While Site B is only about 400 feet closer to the major archeological sites than Site A, it has an advantage over Site A in that the Lower Hidatsa site is visible. Site B is conveniently close (approximately 1/8 mile) to the main resources of the Lower Hidatsa site. Trails from Site B to the Sakakawea Village site will be approximately .65 mile long. Some visitors will not be willing to travel that distance to visit the Sakakawea site.

Because the Lower Hidatsa site is visible from site B, there are fewer constraints on the interpretive media used in the visitor facility or along the trails than at site A.

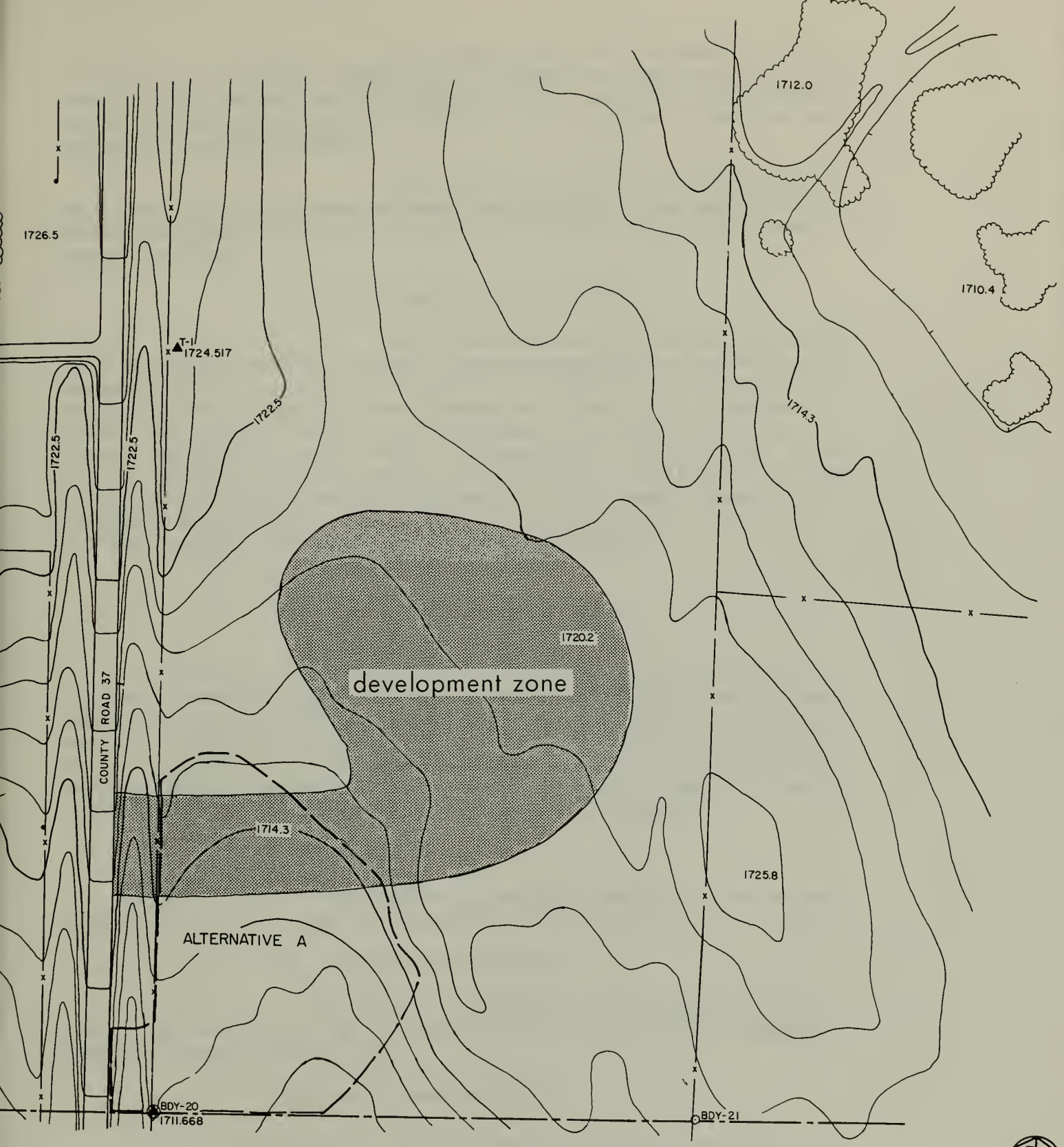
(e) Administrative Considerations

This location provides better protection of the archeological sites than Site A, since several of the main sites are visble from Site B. Ranger patrols will not be required as often as they would be under Alternative A or E, and the potential for vandalism and destruction of archeological resources is less as well, due to the more pronounced "presence" of National Park Service personnel.

(2) Design Considerations and Impacts

(a) Design Relationships

Extension of water and sewer utility lines to this location from present service areas will incur approximately 1.2 times the costs of Alternative A, but only approximately .85 times the costs of Alternative C, half the costs of Alternative D and 3.6 times the cost of Alternative E. No sewage pumping stations will be required to connect with existing sewer mains serving Stanton.



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ALTERNATIVE B

KNIFE RIVER INDIAN VILLAGES NATIONAL HISTORIC SITE

UNITED STATES DEPARTMENT OF THE INTERIOR NATIONAL PARK SERVICE

The comparatively flat topography of Site B will result in minimal construction problems and lend itself to a one-story building design (see Alternative B Map). Access for handicapped people is ideal at this location because it is relatively level and will not require special designs.

The approach road allows drivers time to decide where they must park and enter the building. The traffic circulation pattern achieves the desired objectives discussed under "Development Concept" earlier.

(b) Aesthetic Relationships

This alternative site location is near the south and west boundaries, making it more susceptible to the effects of noncompatible land use changes outside the boundary than Alternvatives C and D, but less susceptible than Alternative A and E. The southern boundary and private land beyond in approximately 480 feet from the visitor facility proposed on Site B. However, it is farther from County Road 37 than the other alternative site locations, resulting in the best distance buffer (approximately 500 feet) from that road. Stanton, the two nearby power plants, and coal strip mines are visible from this location, and will conflict with the historic scence.

c. Mitigating Measures

(1) Cultural Resources

The plowzone would be stripped from the area to be directly impacted prior to construction in an effort to locate, map, hand excavate, and record any subplowzone features that may be present. Because significant archeological remains do not occur on the surface in Area B, only subsurface construction activites have the possibility of damaging important archeological features. Specific areas to be studied cannot be established until the final design is determined.

(2) Natural Resources

The measures to mitigate impacts on the natural resources will be the same as described for Alternative A.

(3) Design Considerations

To control the effects of non-compatible land uses on the private land to the south of Site B a vegetative screen of trees and shrubs could be used.

d. Unavoidable Adverse Effects

Being near the south and west boundaries, this site is susceptible to the effects of non-compatible land use changes outside the boundary.

Additionally, the distant views of Stanton, power plants, and strip mines will conflict with the historic scene.

Archeological mitigation will alter the in-ground archeological resource/information base into an archival resource/information base, resulting in the loss of information.

e. Relationship Between Short-Term Uses and Long-Term Productivity

This relationship will be the same as for Alternative A.

f. Irreversible and Irretrievable Commitment of Resources

This commitment will be the same as for Alternative A.

3. Alternative C

a. Description of the Alternative

Construct a new visitor facility that also includes administrative and maintenance areas as previously described (see Development Program). The site is located in the southwestern portion of the national historic site, north of Alternative A and B site locations (see Alternative Development Sites Map). This site was selected because of its central location with respect to both the Lower Hidatsa and Sakakawea archeological sites. Site C remains relatively close to the county road to stay on the periphery of the Lower Hidatsa site as much as possible. In 1978 during the preliminary planning Site C was also shifted south about 75 yards in order to get it farther away from suspected Indian burial locations. (See Alternative C Map).

b. Impacts and Design Considerations

(1) Impacts on the Environment

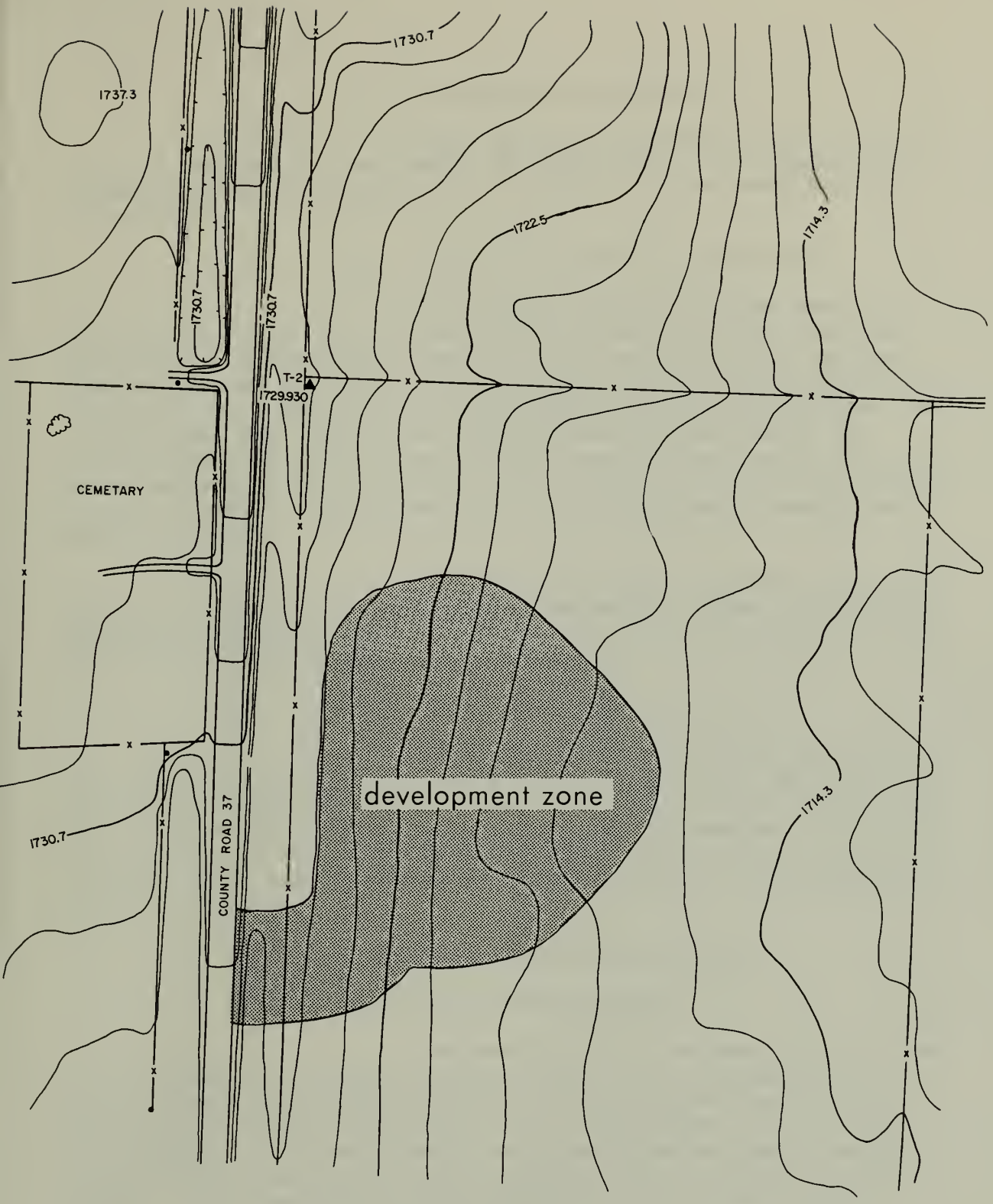
(a) Cultural Resources

Intense surface examinations and subsurface testing for cultural materials yielded six concentrations of surface materials and 17 subsurface features in this location (Ahler, 1979). One of the features was a probable human infant burial. The archeological report estimates that, statistically, other burials could be found in Site C. However, the characteristics of the probable burial indicate that it is not typical of Mandan-Hidatsa interment practices. The likelihood of finding other burials in Site C is low. However, burials, as well as associated artifacts, could be disturbed during construction activities.

(b) Natural Resources

The impacts here would be similar to those described for Alternative A, except 4.5 acres would be disturbed instead of 3.5 acres.

There are no threatened or endangered plant or animal species in the project area that would be affected by the project.



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ALTERNATIVE C

KNIFE RIVER INDIAN VILLAGES NATIONAL HISTORIC SITE

UNITED STATES DEPARTMENT OF THE INTERIOR NATIONAL PARK SERVICE

(c) Socioeconomic Environment

Since Site C is only about 1300 feet north of Site A and also will be reached via County Road 37, the impacts on the socioeconomic environment will be similar to those described for Alternative A.

(d) Interpretation/Visitor Experience

Of the five sites this one has the most advantages for interpretation and visitor experience. Site C is the most centrally located with respect to the Lower Hidatsa and Sakakawea sites and has the best view to both of these sites. From Site C the trail to the main resources of the Lower Hidatsa site would be less than 1.3 mile long, and the trail to the Sakakawea Village would be an additional approximately .27 mile long. These distances are approximately one-half to two-thirds the trail distances that would be required for Sites A and B, and would be more easily negotiated by handicapped or elderly visitors.

Because of the central location, relatively short distance and good view to both archeological sites, Site C offers the fewest constraints and most opportunities for the interpretive media used in the visitor center or along the trails.

(e) Administrative Considerations

This location provides better protection of the archeological sites than Alternative A, since several of the main archeological sites are visible from this location. Ranger patrols will not be required as often as they would be under Alternative A or E, and the potential for vandalism and destruction of archeological resources is less as well, due to the more pronounced "presence" of National Park Service personnel.

(2) Design Considerations and Impacts

(a) Design Relationships

Extension of water and sewer utility lines to this location from present service areas will be approximately 1.4 times greater than for Site A, about 1.2 times greater than for Site B, two-thirds less than under Alternative D, and 4.2 times greater than Alternative E. It is not certain, but appears that no sewage pumping stations will be required to connect with existing sewer mains serving Stanton. The comparatively flat topography of Site C will create a minimum of construction problems and lend itself to a one-story building design (see Alternative C Map). There is enough slope to the site that with further analysis a two-story design may be feasible. Access for handicapped persons is ideal because the site is relatively level, and will not require special designs unless a two-story building is designed for the site.

The traffic circulation pattern achieves the desired objectives discussed under "Development Concept" earlier, but this site requires the steepest grade on the entrance road of any of the alternatives.

(b) Aesthetic Relationships

This alternative site location in near the west boundary and County Road 37, making it susceptible to the effects of noncompatible land use changes outside the east boundary. However, the potential for such changes is small since the Stanton Cemetary is east of the boundary. The visitor facility will be about 240 feet from County Road 37 which carries non-park traffic and conflicts with the historic scene. Stanton, the power plants, and the nearby coal strip mines are visible from this location, and will also conflict with the historic scene.

c. Mitigating Measures

(1) Cultural Resources

The plowzone would be stripped from the area to be directly impacted prior to construction in an effort to locate, map, hand excavate, and record any subplowzone features that may be present. Facility design and siting - for example, reducing the size of the building and/or utilizing the portion of the site with the least concentration or resources - within Area C will be done to minimize the impact on the known cultural resources. There may be need to study and/or collect from the areas of artifact concentration that might be impacted by the project. Such specific areas cannot be established until final design is determined. Any burial sites encountered would receive the same mitigating measures as that given for Alternative A.

(2) Natural Resources

The measures to mitigate impacts on the natural resources will be the same as described for Alternative A.

d. Unavoidable Adverse Effects

Site C is near the west boundary and, although unlikely to happen, it is susceptible to the effects of non-compatible land use changes outside the boundary. The visitor facility in Site C will be approximately 240 feet from a county road that carries non-park traffic and conflicts with the historic scene. Additionally, the distant views of Stanton, power plants, and strip mines will conflict with the historic scene.

Archeological mitigation will alter the in-ground archeological resource/information base into an archival resource/information base, resulting in the loss of information.

e. Relationship Between Short-Term Uses and Long-Term Productivity

This relationship will be the same as for Alternative A.

f. Irreversible and Irretrievable Commitment of Resources

This commitment will be the same as for Alternative A.

4. Alternative D

a. Description of the Alternative

Construct a new visitor facility that also includes administrative and maintenance areas as previously described (see Development Program. The site is located in the west-central part of the national historic site (see Alternative Development Sites Map). This site was selected because it is close to both the Knife River and Sakakawea Village archeological site. (See Alternative D Map).

b. Impacts and Design Considerations

(1) Impacts on the Environment

(a) Cultural Resources

Based on relatively intense surface examinations for cultural materials, this location is the most likely to contain significant subsurface cultural material. This site exhibits considerable evidence of cultural material on the ground surface. Because this area has not been cultivated there is a strong possibility that archeological resources will be encountered both in the plow zone and in the subplow zone. These resources, probably including Archaic materials and human burials, will be disturbed. Although considered for archeological testing, Alternative D was not tested during the 1979 field season because the field discoveries in Areas B and C did not prohibit those areas from further consideration for visitor facility location. Premitigation evaluation of Alternative D consisting of test excavations, magnetic survey, and data anaylsis will cost approximately $20,000. Subsequent preconstruction mitigation will cost approximately ¼ to ½ the amount programmed for construction of the visitor facility. This amount is significantly greater than the mitigation costs expected for Alternatives A, B, C, or E. Accidental disruption or destruction of unknown archeological resources could occur during construction.

(b) Natural Resources

Construction of the visitor facility, paved areas, and extension of utility lines from present service areas will disturb approximately 4.8 acres. This site is on a terrace that slopes toward the Knife River, resulting in unknown amounts of soil erosion and stream siltation from construction activities.

Soil horizons will be compacted, covered, or destroyed over this area. The effects of this disturbance will be more significant under this alternative than under the other alternatives, since these soils have not been previously disturbed by cultivation. Approximately 4.8 acres of native grassland will be destroyed. This

will be a more significant impact than under the other alternatives since this is a more important wildlife habitat. Therefore, a larger number of small mammals and birds will be disturbed or destroyed by the construction activities than under the other alternatives.

There are no threatened or endangered plant or animal species in the project area that would be affected by the project.

(c) Socioeconomic Environment

Since Site D is only about 4000 feet north of Site A and also will be reached via County Road 37, the impacts on the socioeconomic environment will be similar to those described for Alternative A.

(d) Interpretation/Visitor Experience

While both the Lower Hidatsa and Sakakawea archeological sites are visible from Site D, it is a distant view of Lower Hidatsa and most of the Sakakawea site is hidden behind trees. Site D is less than .13 mile from the Sakakawea site, but is nearly .5 mile from the Lower Hidatsa site. Being so close to the Sakakawea site is advantageous because most visitors will have a greater interest in that site. Some visitors will not be willing to travel the distance to the Lower Hidatsa site.

Because of the distances to and views of the Lower Hidatsa and Sakakawea sites from visitor facility Site D, the constraints on the interpretive media used in the visitor facility or along the trails would be less than those for Site A or E, but more than Site C.

(e) Administrative Considerations

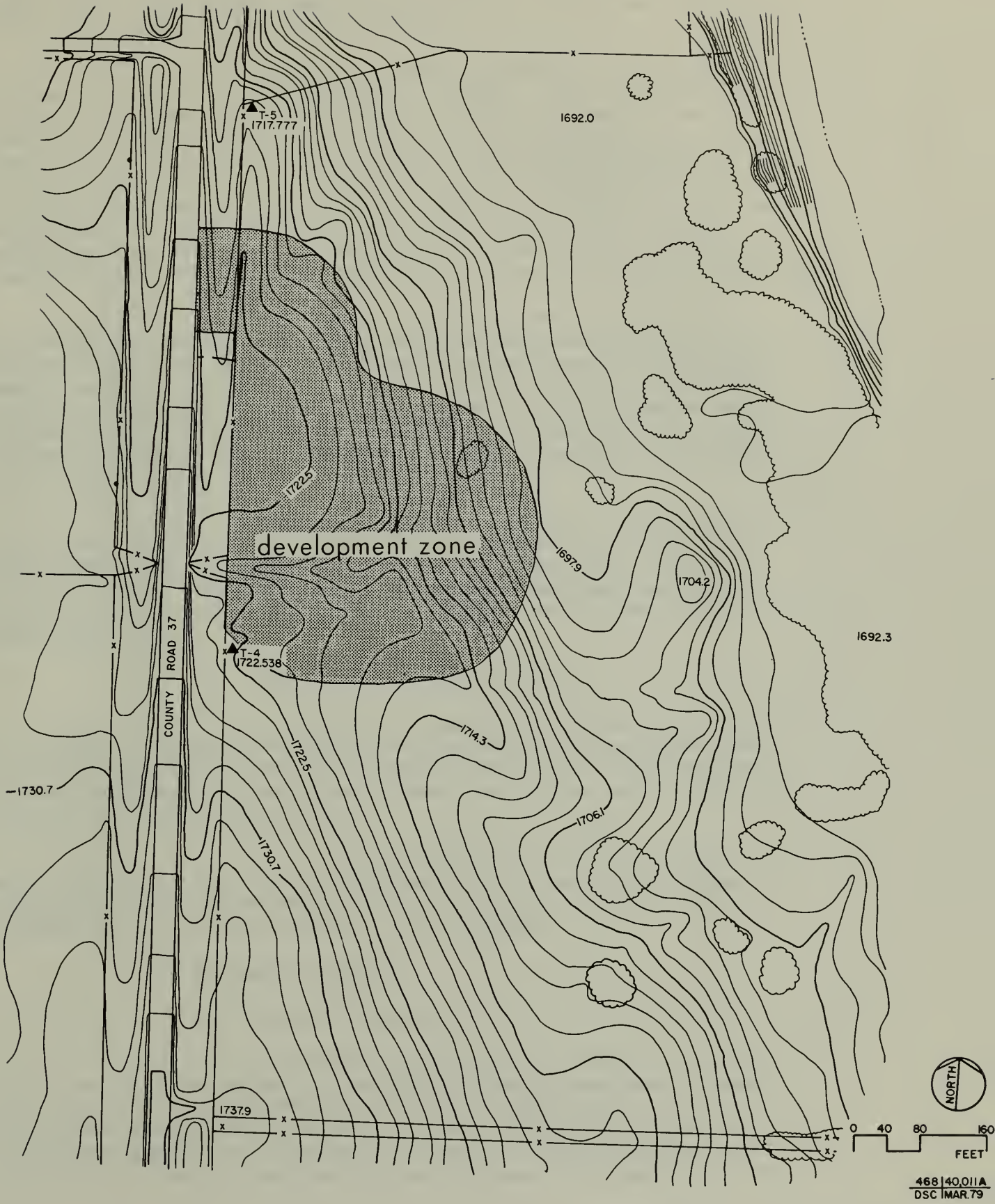
This location provides better protection for some of the archeological sites than Alternative A or E, since Site D is near the Sakakawea site and has a distant view to the Lower Hidatsa site.

Ranger patrols will not be required as often as they would be under Alternative A or E and the potential for vandalism and destruction of archeological resources is less as well, due to the more pronounced "presence" of National Park Service personnel.

(2) Design Considerations and Impacts

(a) Design Relationships

Extension of water and sewer utility lines to this location from present service areas will incur much greater costs than under any of the other alternatives. Alternative D's water and sewer utility costs would be more than twice Alternative A's, approximately twice Alternative B's, over one and a half times the costs for Alternative C and about six times Alternative E. These costs for Site D



ALTERNATIVE D

KNIFE RIVER INDIAN VILLAGES NATIONAL HISTORIC SITE

UNITED STATES DEPARTMENT OF THE INTERIOR NATIONAL PARK SERVICE

result because it is more than twice as far from Stanton as Alternatives A and B, and sewage pumping stations will be required to connect with existing sewer mains service Stanton.

Due to the greater topographic slope across this site, more grading and filling will be required. Due to the slope a two-story or multi-level building design is most appropriate (see Alternative D Map). Ramps, elevators, careful trail planning, or other special design features will be required for handicapped persons due to the topography and two-story design. Topographic constraints have forced the maintenance area to the north side of the building where the maintenance bays cannot be warmed by the winter sun as in the other alternatives and will face the predominate northwest winds, resulting in greater energy consumption for heating than in any of the other alternatives.

The traffic circulation pattern required by this design is less desireable than under the other alternatives as it does not achieve the desired objectives discussed under "Development Concept" earlier. These difficulties in parking lot design and traffic circulation pattern are due to the topography at this alternative site location. Also, the sight distance in both directions along County Road 37 from the entrance road of the proposed visitor facility is less than is desireable, due to the topography.

Additional traffic and visitor flow problems would likely result with the visitor facility at Site D. This would result since a few visitors in their autos would see other visitors on the trails and at the archeological sites before they saw the visitor facility and would park along the county road and head cross-country to archeological sites.

(b) Aesthetic Relationships

This alternative site location is near the west boundary, making it susceptible to the effects of non-compatible land use changes outside the east boundary. The visitor facility will be about 250 feet from County Road 37 which carries non-park traffic and conflicts with the historic scence.

The two nearby power plants, and the nearby coal strip mines are visible from this location and will also conflict with the historic scene. Stanton cannot be seen and this is an advantage over the other alternative site locations.

c. Mitigating Measures

(1) Cultural Resources

Preconstruction evaluation, which has not been carried out for Alternative D, consisting of test excavations, magnetic survey, and data analysis would be necessary to guide facility location. The plowzone would be stripped from the area to be directly impacted prior to construction in an effort to locate, map, hand excavate, and record any sub-plowzone features that may be present. Because Area D is

known to contain extensive surface material, there may be need to study and/or collect areas of artifact concentration that will be indirectly affected by the project. Such specific areas cannot be established until the preconstruction evaluation is done and the final design established. Any burial sites encountered would receive the same mitigating measures as that given for Alternative A.

(2) Natural Resources

The measures to mitigate impacts on natural resources will be the same as described for Alternative A.

d. Unavoidable Adverse Effects

Approximately 4.8 acres of native grassland (soils, vegetation, and animals) will be destroyed or disturbed by construction of the proposed facilities.

There are inherent traffic circulation and visitor flow problems associated with Site D. Sight distance in both directions along County Road 37 is less than desirable from the entrance road of the proposed facility. Some visitors will park along the county road before they get to the visitor facility and will head crosscountry to the archeological sites.

Greater energy consumption for heating than for any of the other alternatives will result from the maintenance area being on the north side of the building.

Site D is near the west boundary and susceptible to the effects of non-compatible land use changes outside the boundary. The visitor facility will be 250 feet from the county road that carries non-park traffic and conflicts with the historic scene. Also, the distant views of power plants and strip mines will conflict with the historic scene.

Archeological mitigation will alter the in-ground archeological resource/information base into an archival resource/information base, resulting in the loss of information.

e. Relationship Between Short-Term Uses and Long-Term Productivity

An opportunity for rewarding visitor use, while promoting the preservation and protection of the cultural resources, will be provided for the lifetime of the visitor facility. To accomplish these goals the ecological productivity of much of the site will be abolished by the visitor facility and associated pavement. Nevertheless, the ultimate ecological productivity of the site will not be affected, since the facility can be removed at some future time. The site then could be planted and seeded with native grassland plant species, but would require an additional century or more before it would restore itself to its present level of ecological development as native grassland.

f. Irreversible and Irretrievable Commitment of Resources

The site will be irretrievably committed to use as a visitor facility for the lifetime of that facility. There will be no irreversible commitment of ecological resources, since the proposed facility can be removed at some future time if so desired, and the site restored to native grassland with proper site preparation and enough time. However, any archeological resources encountered during survey or construction may be irreversibly disturbed. In addition, any excavation for mitigation purposes would amount to an irreversible commitment of archeological resources.

5. Alternative E

a. Description of the Alternative

Construct a new visitor facility that also includes administrative and maintenance areas as previously described (see Development Program). Site E is located in the southern portion of the national historic site (see Alternative Development Sites Map). This site was selected because about one-fifth of the site has been previously disturbed by a road and gravel mining during historic times. Thus, any archeological resources in the mined area have been destroyed or irretrievably disturbed. However, about four-fifths of Site E are previously cultivated farmland and have the potential to contain archeological resources. (See Alternative E Map).

b. Impacts and Design Considerations

(1) Impacts on the Environment

(a) Cultural Resources

Because much of Site E has had its cultural resources destroyed previously by gravel mining, Site E was not tested during the 1979 field season. Based on the preliminary field work that has been conducted around the gravel mine, it is likely that archeological resources will be encountered if Site E is developed. Premitigation evaluation of Site E consisting of test excavations, magnetic survey, and data analysis will be required. Possible accidental disruption or destruction of unknown archeological resources could occur during construction.

(b) Natural Resources

The impacts on natural resources will be similar to those described for Alternative A, except that at Site E 4.0 acres of old cultivated land and 1.0 acre of gravel mined land will be involved instead of 3.5 acres of old cultivated land.

(c) Socioeconomic Environment

The impacts on the socioeconomic environment for this alternative will be similar to those described for

Alternative A. However, the impacts on Stanton due to increased traffic flow will be more severe because the visitor traffic flow will be directly through the north edge of town.

(d) Interpretation/Visitor Experience

Of the five sites this one and Site A have the most constraints and limitations on interpretation. The Sakakawea site will be of greatest interest to most visitors, yet Site E is farther away from the Sakakawea site than any of the other alternative visitor facility sites. Trails from Site E to the Sakakawea Village Site will be approximately 1.0 mile long. Also, Site E is the fartherest from the Lower Hidatsa site (about 0.6 mile). Because of these greater distances, fewer visitors will be willing to travel that distance than in any of the other alternatives.

Additionally, only a distant view of the Lower Hidatsa site and no view of the Sakakawea site can be obtained from Site E; thus prohibiting the use of most interpretive media in the visitor facility that require visual contact with the resource. Use of audio stations along the trails is constrained, because most audio stations will be out of sight from the visitor facility, more susceptible to vandalism, and more difficult to maintain. Any interpretive media susceptible to vandalism probably should not be used along the trails, since most of the trails will not be visible from Site E.

(e) Administrative Considerations

This location provides the poorest protection of the archeological sites, since they are fartherest away from Site E. Patrols by rangers on foot or in vehicles will be required to compensate for this. Even with increased ranger patrols, there is the greatest potential for vandalism and destruction of archeological resources under this than under any of the other alternative site locations because of the less pronounced "presence" of National Park Service personnel.

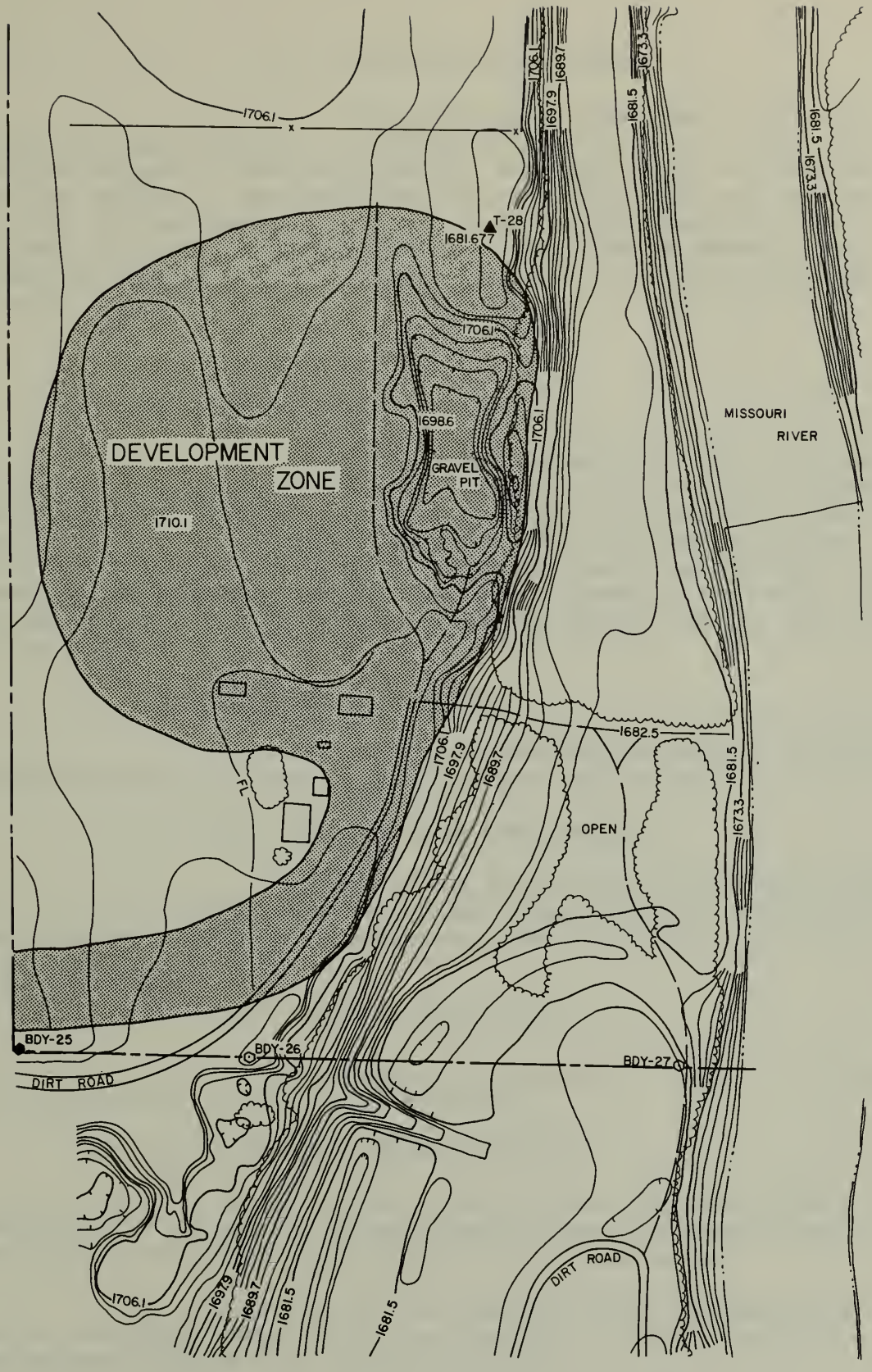
(2) Design Considerations and Impacts

(a) Design Relationships

Extension of water and sewer utility lines to this location from present service areas in Stanton will incur the least cost of any alternatives.

The relative flat nature of Site E lends itself to a one-story building design and is ideal for access of handicapped persons in that special building desings will not be required.

The approach road allows drivers time to decide where they must park and enter the building. The traffic cirulation pattern achieves the desired objectives discussed under "Development Concept" earlier, except that only a distant view of one archeological site will be obtained.



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ALTERNATIVE E

KNIFE RIVER INDIAN VILLAGES NATIONAL HISTORIC SITE

UNITED STATES DEPARTMENT OF THE INTERIOR · NATIONAL PARK SERVICE

(b) Aesthetic Relationships

This alternative site location is near the southern boundary, making it susceptible to the effects of non-compatible land use changes outside the boundary. Site E is about 150 feet away from the boundary. Non-compatible land uses on private land outside the boundary will have an adverse effect on the visitor facility at Site E. The edge of Stanton (only about 650 feet away) and two nearby power plants are visible from this location and also will conflict with the historic scene.

c. Mitigating Measures

(1) Cultural Resources

Preconstruction evaluation, which has not been carried out for Alternative E, consisting of test excavations, magnetic survey, and data analysis will be necessary to guide facility location. The plowzone will be stripped from the area to be directly impacted prior to construction in an effort to locate, map, hand excavate, and record any sub-plowzone features that may be present. Any burial sites encountered will receive the same mitigating measures as that given for Alternative A.

(2) Natural Resources

The measures to mitigate the impacts on natural resources will be the same as described for Alternative A.

(3) Administrative Considerations

Because of the distance and lack of clear views to the major archeological sites, ranger patrols will be necessarily more frequent to maintain as adequate a level of protection as the other alternative sites.

(4) Design Considerations

The measures to mitigate the impacts on design will be the same as those for Alternative A.

d. Unavoidable Adverse Effects

Being so close to and in view of Stanton, Site E is susceptible to the effects of non-compatible land use changes outside the boundary, and major conflicts with the historic scene.

This site will be fartherest from the main archeological resources, resulting in less visitation to those resources and the greatest potential for vandalism of them.

Archeological mitigation will alter the in-ground archeological resource/information base into an archival resource/information base, resulting in the loss of information.

e. Relationship Between Short-Term Uses and Long-Term Productivity

This relationship will be the same as for Alternative A.

f. Irreversible and Irretrievable Commitment of Resources

This commitment will be the same as for Alternative A.

6. Alternative F - No Action Alternative

a. Description of the Alternative

No new visitor facility or associated administrative or maintenance areas will be constructed. The national historic site will remain in its present undeveloped state. No trails or interpretive facilities will be provided.

b. Impacts and Design Considerations

(1) Impacts on the Environment

(a) Cultural Resources

Since there will be no construction under this alternative, no impacts, either positive or negative, are anticipated on cultural resources of the area.

(b) Natural Resources

Since there will be no construction under this alternative, no impacts, either positive or negative, are anticipated on the natural resources of the area.

(c) Socioeconomic Environment

No impacts, either positive or negative, are expected to occur on the region's economy.

(d) Interpretation/Visitor Experience

Lack of a visitor facility and interpretive programs at the national historic site will deprive visitors of a fuller understanding and appreciation of the cultural resources present.

(e) Administrative Considerations

The continued absence of a visitor facility and associated administrative personnel will result in an increased demand on the existing staff to patrol and protect the archeological resources. This will result in the greatest potential for vandalism and destruction of archeological resources, because this will create the least pronounced "presence" of National Park Service personnel.

(2) Design Considerations and Impacts

Since no construction is proposed under this alternative, design is not a consideration.

c. Mitigating Measures

Since no action is proposed, no mitigating measures are proposed.

d. Unavoidable Adverse Effects

Lack of a visitor facility and interpretive programs at the national historic site will deprive visitors of a fuller understanding and appreciation of the cultural resources present. The continued absence of a visitor facility and associated administrative personnel will result in an increased demand on the existing staff to patrol and protect the archeological resources. This will result in the greatest potential for vandalism and destruction of archeological resources, because this will create the least pronounced "presence" of National Park Service personnel.

e. Relationship Between Short-Term Uses and Long-Term Productivity

The long term ecological productivity of the site will be retained, at the expense of a lost opportunity for providing rewarding visitor use and promoting the preservation and protection of the cultural resources of the national historic site.

f. Irreversible and Irretrievable Commitment of Resources

Since no action is proposed, no resources will be committed.

IV. CONSULTATION AND COORDINATION WITH OTHERS

The City of Stanton was consulted to determine if it would be feasible to use their utility systems. From this consultation it seemed very likely that an administrative/visitor facility could use the city water and sewer services.

The Three Affiliated Tribes were consulted to obtain their preliminary reaction to the alternatives being considered. As a result of this meeting an additional alternative was formulated and is assessed in this document.

The U.S. Soil Conservation Service was consulted to obtain soils and floodplain information.

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